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and Training
Federal Extension Service
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NATIONAL EXTENSION RESEARCH

SEMINAR

April 18-21, 1961

Memorial Center, Purdue University
Lafayette, Indiana

ER&T-55 (3-62)

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PREFACE

The National Extension Research Seminar held at Purdue University, April 18-21, 1961, was the culmination of the efforts of a program planning committee whose activities extended over a period of more than a year. In whatever success the Seminar achieved, this long period of careful planning that preceded it was an important factor.

Extension research in the various States is performed through a variety of organizational approaches. Beyond all expectations, the Purdue Seminar succeeded in bringing together many of the persons responsible for this research, even though they came from several different organizational units of their institutions.

The high caliber of the papers presented and the interest in the accompanying discussions were sources of real gratification to those who attended. This report is a compilation of the papers and contains, in addition, a brief evaluation of the Seminar which was conducted by the personnel of the Division of Extension Research and Training of the Federal Extension Service.

Appreciation of the participants and the Planning Committee is extended to the State Extension Directors for their fine support, and especially to ECOP for its authorization of the Seminar.

Frank D. Alexander, Chairman
Seminar Planning Committee

March 1962.

In the six sections that make up the body of this report are all the formal presentations prepared by the Seminar participants. It is to be regretted that more of the graphic materials and other visuals that were used to supplement the presentations could not be included.

Those who attended some or all of the sessions may experience difficulty in recognizing certain of the papers. Two reasons account for most of the discrepancies. First, some of the authors chose to revise their manuscripts, before resubmitting them to the committee, so that ideas growing out of Seminar discussions or new data could be incorporated. Others found it necessary to expand discussion outlines or notes into formal papers. In most cases, such adjustments have resulted in lengthened as well as improved papers.

Second, in the interest of a more standardized format, certain editorial liberties had to be taken with the manuscripts as submitted. Adjustments to accomplish this end have necessitated some rewriting of passages, largely to minimize footnotes and to unify paragraphing and subheadings. If any changes in meaning have resulted, full responsibility must be assumed by the editor.

Darcie Byrn
Editor

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Section I.

PRE-SEMINAR CLINIC ON PROBLEMS OF EVALUATION RESEARCH ON THE FARM AND HOME DEVELOPMENT PROGRAM

Part A.

Research Designs

RESEARCH DESIGN: THE IOWA FARM AND HOME DEVELOPMENT STUDY

George M. Beal
Professor of Rural Sociology, Department of Economics and Sociology
Iowa State University

Farm and home development had been conducted on an experimental pilot county basis in Iowa several years prior to 1954, when national impetus was given to this program by Federal sanction and appropriations. On the basis of the apparently successful results in the pilot counties and the additional impetus from the Federal level, the decision was made to expand the program to other "selected" counties in the State. The "selection" was based largely on desires of the county extension staffs and their local governing bodies.

The philosophy of farm and home development in Iowa involved an intensive educational effort with a relatively small number of families. The basic question raised was, "is this approach a more effective and efficient use of resources, in terms of educational outcomes, than other alternatives or combinations of alternatives?"

It was out of this basic question that the Iowa Farm and Home Development Study emerged with the function of providing some of the data that would allow extension administration to decide more rationally on the role of farm and home development in the overall Iowa extension program.

THE ACTION PROGRAM: FARM AND HOME DEVELOPMENT IN IOWA

It is an impossibility to condense in this paper the basic and evolving philosophy of the educational phase of farm and home development in Iowa. There was an original general level philosophy of farm and home development. Over the time of the research project, this philosophy was modified and added to. In a number of cases it was operationalized to more specific objectives and means.

Perhaps the best way to communicate this philosophy is to present summaries of two presentations made in one of the training workshops for county staff members who were ready to implement county farm and home development programs. This level of presentation represents an attempt to operationalize the philosophy at a teachable level, and also represents a common experience for many of the staff members carrying out the program.

First Presentation:

LOGIC AND PHILOSOPHY OF FARM AND HOME DEVELOPMENT

Carl Malone
Staff Consultant on Farm and Home Development
Iowa State University

A. Two related sets of logic lie back of farm and home development.
   1. One set of logic has to do with the educational needs of the young husband and wife as they begin married life and start their life work. Among their first needs are to:
      a. Clarify family values, establish long and shorter-run goals, and identify the personal abilities and resources that are important in the occupation they plan to pursue and in homemaking and family life.
      b. Set out to get started in the occupation they prefer and in homemaking and family living. If the chosen occupation is farming, they have special needs in:
         (1) Learning the "production possibility level" of their farm, home and personal resources and how to relate these to farm, home and family goals and objectives.
         (2) Improve their ability in farm, home and family management; in problem solving and decision making; and in adding, as needed, to their technical knowledge and personal skills, so they can make their management efforts effective.
   2. Another set of logic has to do with the way Extension's own resources can best be organized and managed to satisfy the education needs of people in the county. People in Extension - extension workers, extension councils, and program committees - should learn to apply good problem solving and decision making methods so Extension's resources will be used effectively. Some of the useful logic here, in relation to farm and home development, includes:
      a. An appreciation that the beginning of a farm family's life is the most effective period in which to do educational work in management and decision making.
      b. The nature of the family's educational need in farm and home development calls for group education work in both management and decision making.
      c. The organization of the farm and home development program in the county should be based on a careful appraisal of the county situation, extension objectives, staff and leadership resources, and alternative program and subject-matter possibilities.
      d. Educational assistance to any one family will likely experience increasing returns for a while, and then diminishing returns in respect to its added contribution to family welfare. This should be taken into account if Extension's general goal is "the greatest good for the largest number of people." It also suggests that "new" families will regularly be taken into the farm and home development program as "old" families are graduated to other extension programs.

B. The conclusions that follow these two sets of logic are:
   1. The county farm and home development program that is adopted, and the subject matter and methods that are used, should be aimed at the largest total of educational help in proportion to the extension resources that are assigned to it.
   2. Based on an estimate of the total educational needs of the people in the county being served, extension resources will be allocated to the farm and home development program to the degree that more is to be gained by using them for this purpose than is given up by taking them away from some other use in the county.

C. As to philosophy, the main objective is to so educate family members in the early years of their married life that they can reach the largest number of their goals through their own efforts and by the full development and use of the talents which the family members possess as a group.

Second Presentation:

FARM AND HOME DEVELOPMENT AND ITS RELATION TO THE USUAL EXTENSION APPROACH

Purpose of This Statement

This is a description of the farm and home development approach and shows the way it is related to extension work as it has operated in Iowa over the past several years. It follows the graphic outline on the accompanying page (not a part of this presentation). It should be noted that the farm and home development approach is designed to be an integral part of county extension work; old and new go together and complement each other.

It should also be noted that this is a description of an idea that is not altogether a finished product. Rather, it describes something that will be more clearly evident a year or two hence as the farm and home development program gets into full operation and becomes a more mature part of Iowa extension work.

Description

This description follows the sections on the accompanying chart (not a part of this presentation) designated by capital letters.

A. Iowa State University, which includes the teaching, research and extension functions, is the administrative headquarters for extension work and the main source of our subject-matter material. The Agricultural and Home Economics Extension Service directory lists about 30 different groups, 20 of which are subject-matter departments. No change in organization at the University is needed to put into operation the farm and home development approach.

   In the usual operation of extension work, most subject-matter material is developed on a departmental basis and is extended to people through approved project plans. Two general routes are used to extend educational information from the University to the people.

B. One route for extending information is through programs that go directly from the University to the people concerned. Two general ways are used for these direct programs.

One way is mass media. Here information goes direct to people through radio, television, written material prepared at the University, etc. This material may be addressed to people generally or to an audience interested in a particular subject-matter idea.

The other direct route is the one used by specialists in working directly with certain organizations and groups, often those organized on a statewide basis. Quite a little marketing work is done in this manner. For example, specialists may work directly with the Iowa Grain Dealers Association, the Lumber Dealer's Association, the Rath Packing Plant, breeders associations, Iowa Nutrition Council, and similar organizations and groups.

C. The largest extension route is that through the county extension staff and program in the 100 extension counties. Information flows from the University through the county extension staff and program to the people of a particular county. Each county program includes a wide range of subject matter and many methods are used in extending it to the people of the county.

D. In summary, if we characterize the usual extension approach, it might be done this way. First, it is subject-matter oriented, since it stems from subject-matter departments. Second, practices are emphasized in it. Third, information given is generally recommended to all people who are interested.

E. In each county there are many farm people who have special decision making problems related to the farm, home and family. A large number of these are younger families. If we count all the farm families where the head is 35 years of age or younger, the average county in Iowa has about 450 such families. The range among the different counties is from 300 to 500, in most cases. In the main, these are the families to whom the farm and home development approach is directed.

F. The general objectives of extension work apply to farm and home development as well as to extension work of other kinds. However, the farm and home development approach has three specific objectives. These are to educate the family to:

1. Set family goals.
2. Make full use of talents and opportunities.
3. Manage well.

G. To implement these objectives, the farm and home development idea proposes that the county will initiate a seven-part sequence. This sequence will be used to teach families how to:

1. Consider their goals, needs and wants.
2. Appraise their resources and opportunities.
3. Analyze alternatives available to them.
4. Select the most appropriate choice among the alternatives.

5. Develop a family program and plan of an integrated kind, containing:
   a. A farming plan.
   b. A homemaking plan.
   c. A family development plan.
   d. A family security plan.
6. Select and use the combination of practices and ideas needed to put the plan into use.
7. Evaluate and adjust the plan.

H. If farm and home development is characterized in a general way, the following points are important:
   1. It is family rather than subject-matter oriented.
   2. It is an organized sequence.
   3. The informational material is integrated.
   4. Action by the family is inherent.
   5. The decision making process can be used by the family all through life.

Summary

The farm and home development approach, as described, is designed to be an integral part of the county extension program. It is to be coordinated with the regular county extension program. In many ways, the farm and home development program and other county extension programs complement each other.

It will be noted in this brief description of the farm and home development approach that the methods to be used in carrying out the county program have not been presented. Counties that plan to undertake a farm and home development program need to consider this matter carefully. An understanding of the nature of the farm and home development approach and how it is related to the other phases of extension work should come first. That is the purpose of the outline presented here.

THE RESEARCH PHASE OF THE FARM AND HOME DEVELOPMENT PROJECT

Administrative Structure

The Farm and Home Development Project in Iowa was a joint project between the Agricultural Extension Service and the Agricultural Experiment Station in cooperation with the W. W. Kellogg Foundation. The project was under the general supervision of the Interdisciplinary Committee for Research on Intensive Extension Programs. The committee was composed of:

Dr. Glenn Hawkes, Professor and Head of Child Development
Dr. Earl Heady, Professor of Agricultural Economics
Dr. Margaret Liston, Professor and Head of Home Management
Dr. Mary Lyle, Professor of Home Economics Education
Mr. Carl Malone, Professor of Agricultural Economics,
Extension Staff Consultant in Farm and Home Development, and
Liaison with the Extension Committee on Farm and Home Development
(action committee)
Dr. George M. Beal, Professor of Sociology, Extension Research, Chairman

In addition, Mr. Norman Strand, Professor of Statistics, was the statistical consultant. Under this committee, direct responsibility for the project rested with Mr. Marion Bryson, Associate in Statistics, for the first three years and with Dr. Al Orman, Assistant Professor of Sociology, for the last three years.

Experimental Design - State and County

The basic objective of the research phase of the farm and home development study was to provide data about the relative effectiveness of the farm and home development educational approach when compared with the traditional extension educational approach. Two basic assumptions were made at this point in the project: (1) That through training and counseling with county staffs, the philosophy, objectives, and means of farm and home development would be communicated to those counties implementing FHD so, in reality, there would be an FHD approach in those counties. It was recognized that the operationalization of the program would be different in different counties. Therefore, it was proposed that an attempt would be made to study the program as it was actually operationalized in the sample counties in an effort to determine actual program carry-out.

(2) That there was enough commonness in other (non-FHD) county programs to constitute a "traditional extension educational approach." In the case of these counties, the attempt was also to be made to determine the actual programs being carried out.

Two major considerations arose at this point in the design: (1) Some counties had already embarked on FHD programs. (2) Since the experimental program was to run for only four years, there had to be some assurance that control counties would not become "contaminated" with the treatment - FHD programs. These considerations led to a four-way classification of all Iowa counties.

1. Those counties which had an FHD program already under way.
2. Those counties which had no FHD program, but were ready to initiate such a program.
3. Those counties which had no FHD program and were not ready to initiate one immediately, but had high probability of initiating one during the next four years.
4. Those counties which had no FHD program and would probably not initiate an FHD program within the next four years.

Thus, the counties in category two were the potential treatment counties. Those in category four were the potential control counties.

The second stratification was made on type of farming area in Iowa. This criterion was used for three major reasons:

1. To assure different type of farming area counties in the sample.
2. To give a somewhat general sample distribution over the State.
3. To attempt to provide counties that were in different extension supervisory districts - thus providing a realistic test of the program under different supervision and area specialist resources.

Each of the potential treatment counties was paired with a potential control county. The counties were paired on the basis of soil types, type of farming, income, and county staff competence. Distinct ethnic or other unique characteristics,

such as urbanization, also were considered in pairing. From the resulting pairs one pair was randomly selected in each of the five types of farming areas. Thus, at the county level, the sample was composed of five pairs of counties.

Within County - Farm Family Sample

Since sampling procedure was in part dependent on the definition of the "most eligible" people for the FHD educational program, rules of eligibility for inclusion in the farm family sample will be stated first. Eligibles included all farm families:

1. Who consisted of at least an operator and a homemaker who were husband and wife.
2. In which the operator was under 38 years of age.
3. In which the operator worked less than 100 days off the farm.
4. Whose gross income from sale of agricultural products totaled more than $1,200.
5. In which the operator was not in partnership with a person over 38 years of age.
6. Who intended to operate a farm in the sample area during the next farming season.

In the educational phase of the FHD experiment, we proposed to use both direct family counseling and the small group approach. The recommendation was that groups should be organized as nearly as possible on a "community" basis. It was also believed that groups of approximately 15 families each would approximate the optimum size with which to work. It was further believed that three groups of this size would probably be a maximum load for the committed staff time during the first few years of the new program. Thus, it was decided that the benchmark interviews should be clustered in three "community" areas in each county.

The county staff was to delineate its county into communities that it thought would be most meaningful for FHD educational purposes. Very little difficulty was encountered in drawing the boundaries of these "communities." The county staff was further asked to rank all of the delineated communities into three strata: The third of the communities that had the lowest degree of cooperation with Extension, the third that had a medium degree of cooperation, and the third that had the highest degree of cooperation. One "community" per county was drawn at random from each of the level-of-cooperation group categories - three communities for each county.

Lists of all eligible families (in terms of previously stated criteria) in each community were compiled. Within each community a random sample of eligible families was drawn, in proportion to the size of a given community relative to the size of the other communities in the county.

The same procedure was followed in both the treatment and the control counties with one major exception. It was recognized that there would be a selective factor in who participated in the FHD program. It was believed to be desirable to determine the degree of selectivity and the characteristics of participants in FHD and the nonparticipants in the treatment counties. Therefore, it was decided to interview a sample of all eligible families. This would allow for some degree of generalization about the effectiveness of the program with all eligible families in the counties.

Since the program had not yet started, there was no way to determine who would participate. To attempt to have large enough numbers for analysis of participants in FHD, it was decided to sample 55 eligible families in the treatment counties and 35 in the control counties. These figures were based on estimates of participation from the pilot FHD counties and on limitations on the interview budget. In total, 271 treatment families and 161 control families were drawn.

This sampling procedure would allow for inter-county pair comparisons, and intra-treatment county comparisons between FHD family participants and non-participants -- or, possibly, for an analysis of a continuum of degree of participation in FHD. However, on strict sampling theory, it would not allow for total State (five-county) aggregations of data and comparisons between all treated and all control.

Analysis of variance will be the prime statistical technique used to test for significant differences between treatment and control counties. For discreet "variables," chi-square will be used. Within-treatment-county analysis will probably also involve correlations, both zero order and multiple.

MEASURING THE EFFECTIVENESS OF THE PROGRAM

Basic Benchmark and Follow-up Study

The general experimental design was a treatment and a control with "before" and "after" benchmarks. The basic problem then became, how does one measure the effectiveness of the program. To me, this is by far the most difficult part of completing this "action" type of research. The major areas of concern appeared to be three in number.

1. The specific objective of this study was to measure the relative effectiveness of the FHD method as compared with the traditional method of carrying out extension education. The basic question arises, are the ultimate objectives of FHD the same as for the traditional approach? Perhaps, at a general level, the objectives are coterminous. However, when one moves into means and a choice of ends in view, intermediate ends, and short-time ends, there may be lack of complete agreement on means and ends. How is this problem reconciled in developing measurement devices?

2. The decision had already been made that the major clientele for FHD would be those under 36 years of age. This had been controlled by interviewing only those of like ages in the control county. However, a basic problem still existed.

Assume the content and objectives for FHD could be precisely delineated. Assume these were different and more specific than the traditional approach. Then would it be objective to measure only changes in behavior foreseen as a result of the FHD program? For instance, the treatment counties might show up as making much greater progress in the goal areas of FHD, but nothing was being done in the vast number of other extension educational areas. On the other hand, the control counties might show up poorly in the FHD objective areas but be much better in other extension educational areas.

To be more pragmatic - if all the county staff time was allocated to getting people to paint mail boxes they should be able to get a lot of mail boxes painted. That county would show up good in mail box painting - but probably poorly in all

other areas. The "non-mail box" counties would show up better in most other extension educational areas.

These two problems were resolved for the purpose of this project in this way. It was found that by making certain assumptions and inferences at a given level of means-ends statements that there was a high degree of complementarity between the objectives of FHD and the traditional extension program. Secondly, where there was special emphasis on unique means-ends in either the FHD or traditional extension program, an attempt was made to measure them also.

3. What really were the objectives of FHD? What behavior changes was the program attempting to bring about? As can be seen in the previous description of the program, many of the statements are not objectives. Most of the statements are at a general level that would have to be operationalized through several levels before empirical measures could be developed. In all cases, much judgment entered into the operational procedure. In many cases, there were no existing or generally accepted measures for the behavior change, once operationalized to the empirical level. This was true even with an apparently simple concept such as net income - there are several different ways it can be computed.

This problem can be summarized in a very blunt statement: Those in charge of FHD could not tell the research committee in precise terms just what the objectives, content and behavior changes were to be for FHD. In some areas they could not even tell us "in general" what the program was to be. Parenthetically, and with tongue slightly in cheek, I believe the greatest contribution the research phase of the project made was to push those in charge of the action program to really think and make decisions about the philosophy of the FHD program, as well as how they were going to operationalize this philosophy into objectives, content areas and expected behavior changes by those taught.

This problem was never truly resolved. With numerous joint committee meetings, between the action and research committees, with many individual contacts, and with much pure conjecture on the part of the research committee, certain assumptions were made about philosophy, content and behavior changes to be brought about by the program. Rough probabilities were attached to the areas to be included in the schedule and priorities on these areas were assigned.

Because of the broad range of behavior changes possible under general objectives of the program, it was thought imperative to include many areas in the schedule. Due to limitations of time, money and interviewee fatigue, only judgment or validated indicator items could be used in many areas.

The final operational schedule was approximately 27 pages long for the men and 22 pages long for the women. Each interview was split into two stages; the stages were taken approximately a month apart. In total, the interviews with each couple, took approximately four to five hours.

The following are general category areas of information gathered:

1. Husband, wife and family goals.
2. Economic status of the farm family, both firm and household (very detailed).
3. Efficiency of farm firm operation (very detailed).
4. Farm, household and child rearing practices used.
5. Sources of information used in major household and firm decision making.

6. Use of the Extension Service.
7. Knowledge levels on specified farming and household areas.
8. Decision making in the family on specified purchase, child rearing and social activity areas.
9. Marginal returns concept.
10. Record keeping.
11. Social participation.
12. Use of credit.
13. Satisfaction with farming, family life, household conveniences, institutions, community goals.
14. Personality (Gordon Personality Profile).

Intermediate Data Gathering

During the four-year interval between the benchmark study and the following final interview, certain data were collected.

1. Data were recorded by the county staffs, and collected by research personnel at least twice a year, in the following areas:
   a. Number of times the treatment families (or husband or wife in the family) were personally contacted on the farm specifically in regard to the FHD program.
      (1) Amount of time spent with the family or family members.
      (2) Major content areas discussed in the contact (recorded on an outline form that listed major possible areas).
   b. Number of times treatment families (or husband or wife of family) were contacted in FHD group meetings.
   c. Number of times treatment families were perceived to be contacted by regular extension educational program (not individual FHD contacts or FHD meetings - mainly other extension educational meetings).
   d. County staff rating of treatment families on the degree of their participation in the FHD program.

2. Interim studies (1958 and 1959) with the county staff personnel, to measure such things as:
   a. Their perceptions and definitions of FHD.
   b. The importance attached to the FHD program by staff, specialists, supervisors, State administration.
   c. Their perception of supervisory and specialist help provided and needed.
   d. Their satisfaction with the program and progress being made.
   e. Their perception of administrative interest, supervision and authority, and responsibility.
   f. Their evaluation of intra-county staff cooperation.

3. Input data (amount of time of county, supervisory and State staff allocated to FHD treatment counties). An attempt will also be made to prorate additional administrative and overhead costs directly attributable to FHD in the treatment counties.

PROBLEMS INVOLVED IN THE TIME SPAN COVERED BY THE STUDY

The following are some of the major problems encountered as a result of the time span of the study:

1. The movement of people out of the treatment or control areas. An attempt was made to overcome this problem by over sampling in the initial benchmark study. The follow-up study provided a total of 220 treatment county families and 134 control county families. No treatment county fell below 40 in the follow-up study; the minimum number in a control county was 33.

2. The differential acceptance of the FHD program by families in the treatment counties. This ranges from no contact, through contact but no participation, "in and out" of the program, and late entry into the program, to high continuous participation in the program. An attempt will be made to classify all treatment families as to their degree of participation, based on data gathered in our interim contacts with county staffs.

3. The changing conceptions of FHD by State level leadership, supervisors and county staffs. The only measures of this will be our interim study, in which we interviewed county staffs, and the judgments of the extension representative on the research committee and the operational leader of the research phase of the project.

4. The changing emphasis placed on FHD by administrative, supervisory and county staffs. The only measures we will have of this is the time spent on the program, the contacts made by county staffs in the treatment counties, and the judgment of the operational research leader.

5. Changes in administrative, supervisory, specialist and county staffs. A record has been kept of these changes, as well as the amount of time counties were without full staffs, and adjustments that were made in county staffs to meet FHD program commitments.

6. "Contamination" of the control counties. Direct contamination was kept to a minimum. As much as possible, administration and State program leaders "discouraged" control counties from embarking on FHD programs. Where local demand was great for the FHD program, pilot approaches to FHD were made in communities other than those drawn as control communities in our sample.

Indirect contamination obviously occurred. Control county staffs knew of the FHD concept. Supervisors often discussed it with county staffs, directly or indirectly. The general philosophy of the approach permeated many of the traditional extension educational efforts. But, in no case, was a direct, formal, organized approach used in any of our control communities.

7. Continuity of research personnel. Several members of the inter-disciplinary committee were on leaves of absence at various times during the run of the project. The operational research leadership changed once during the study. However, there was an overlap between the two leaders, so major continuity was maintained. We now face the problem of the second operational leader leaving before the final analyses are made.

8. While all of the above can be considered as intervening variables fairly certain to have impinged on the treatment and control counties, we realize there

were many other intervening variables, possessing varying degrees of obviousness or subtlety, that may have aided in confounding the results of the experiment. The four-year time span provided opportunities for many more of these to have their effect than would be the case in an experiment with a shorter cycle.

EXPECTATIONS AND DEFINITIONS OF ADMINISTRATORS AND OTHERS IN THE STATE REGARDING THE STUDY

One measure of the importance attached to this study, and to sound evaluation of extension programs - both experimental programs and relatively well accepted programs - is the substantial commitment of financial and personnel resources that was made to the staff and the public regarding this specific project.

Iowa may be relatively unique in the strict policy suggested by the research committee, and agreed to by the administration, that there be no "feedback" of research data during the run of the experimental program. The basis for this policy is to keep to an absolute minimum the possibility of the research, in actuality, becoming a part of the treatment.

It was impossible for the research committee to conceive of how most of the type of data collected in the elaborate research phase of this project would be available to future counties that would embark on FHD programs. Thus, if these types of data would not be available to counties who in the future would embark on FHD, it would seem logical that they should not be released to the present treatment counties. If they had been released, the data would have become a part of the treatment that would be unavailable to counties entering the program in the future - thus, an unrealistic experiment on FHD would have been conducted.

No materials have been released from the research phase of the project, nor have any verbal reports been made to extension administrators or staffs. However, extension administration and the various staffs appear to be anxiously awaiting the findings of the study. Our first preliminary report will be made on April 25.

PROBLEMS ENCOUNTERED IN THE STUDY OF FARM AND HOME DEVELOPMENT IN THE STATE OF WASHINGTON

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INTRODUCTION

The official title of this discussion indicates that the interest of the extension research group in this seminar is to be focused on the problems which were encountered by the three participating States represented here. It is said that confession is good for the soul and it is my own personal belief that we should gain much by analyzing what we have done to see if we can learn some lessons which may be applied in the future.

We did not do a perfect job in setting up our research design. Neither did we approach perfection in executing the plan which we adopted. Some of our difficulties were created by the realities of the situation, some by our perceptions of it, and some because of our own inadequacies. We did the best that we knew how and, when I say that our work could have been improved, I am simply applying hindsight. I do not want my remarks at this conference to be interpreted as critical of the contributions or judgment of any of my associates, past or present.

I recognize that our study may have deficiencies other than those which are apparent to those of us who participated directly in it. For this reason, I propose to outline in considerable detail the proposed and actual design of the study and to cover, in more detail than I might otherwise do, certain aspects of project administration. This should enable the perceptive research man to make his own judgment as to the adequacy or inadequacy of the design and execution.

In addition, I will indicate certain things which seem to us, in the light of subsequent developments, to have been errors of design or of execution. Where possible, I will also indicate the reasons which were considered sufficient justification for the actions actually taken.

At the same time, I would like to call your attention to some things which are not problems. We did some things in this study which seemed to us to have considerable merit. Some of these may warrant favorable attention by others. We are of the opinion that our efforts were not entirely unsuccessful.

FARM AND HOME DEVELOPMENT IN THE STATE OF WASHINGTON

As conceived by the Washington Agricultural Extension Service, farm and home development, or farm and home planning as it is called in the State of Washington, is a method of doing extension work. In our progress report to the W. K. Kellogg Foundation covering activities during the first year of our participation in the project, 1955-56, we stated:

> ...it integrates, at the family level, the research and practical information that is available for assisting families in making improved decisions. Improved

decision making, we think, is the heart of the method...Although the main decisions have to be integrated by the family as a unit, we do recognize... that some decisions for the farm and for the home are made by the 'manager' of each respective unit. That is to say, the operator in the normal course of running a farm will make some decisions without consulting the total family. The homemaker, in running the home, will do likewise.

Undergirding the family in making its decisions are resources available to the members. We have grouped these under the subheads management, labor, capital, and credit. One of the important steps in improved decision-making by the farm family is to carefully inventory and appraise resources. Overhanging all decisions of the family are its felt needs, expressed or unexpressed, which we have called goals. These, we think, also need to be thought through and listed by families.

In order to...describe the areas of decision-making we have divided the factors affecting decisions on both the farm and the home side into those (1) largely beyond control of the family, (2) slow to change, and (3) subject to frequent change.

Those factors like climate, largely beyond the control of the family, must be considered in making decisions even though they cannot be changed. When a capital investment, either farm or home, presents itself as an alternative to the farm family, the decision is extremely important. Once made, it cannot be easily changed. Many times, not only must this family live with it, but succeeding families as well.

Most of our work with families deal with those factors subject to change. The important point we would like to emphasize in our concept of farm and home planning is that these decisions are closely interrelated, even though one may involve the home and the other the farm.

So far as I am able to determine, the foregoing quotation still reflects the official position of the Washington Agricultural Extension Service with respect to the nature of farm and home development.

Program Organization

Federal funds allocated to the State of Washington for use in farm and home development were utilized for the most part to add agents who were given the same types of responsibilities as those who were already members of the staff. Two positions, at the State level, were established and the persons assigned to them were identified specifically as full-time farm and home development specialists. One was an agricultural economist, the other a home economist.

The recommended procedure in farm and home development is for both male and female county agents to work with a farm family at the same time.

The diffusion of responsibility for farm and home development among essentially all members of the county level staffs means that no specific individual at the county level is responsible for carrying out farm and home development activities but that all are equally responsible. Funds devoted to farm and home development in the State of Washington at present represent approximately 19 full-time man-year equivalents.

Most of the counties have reported working with families at one time or another during the five years of the study. The number of counties and the total number of families worked with each year are:

Year	Number of counties	Number of families worked with
Prior to 1955		43
1955		183
1956	22	276
1957	28	330
1958	35	442
1959	33	416
1960	29	304

The number of farm families in Washington, according to the Census of Agriculture, was 65,175 in 1954 and 51,575 in 1959. Thus, it is readily apparent that only a very small proportion of the families potentially eligible for participation have been worked with during the five-year period. 1/ This is particularly true in view of the fact that a fairly substantial although unknown proportion of the families has participated for more than a single year.

THE STUDY

Project Organization

The project was a joint undertaking of the Agricultural Extension Service and the Agricultural Experiment Stations. Major responsibility for administration of the action phases of the experiment rested with the Agricultural Extension Service. Responsibility for research design and collection and analysis of data rested with the Experiment Stations. The Department of Rural Sociology was responsible for collection and tabulation of data and for analysis and evaluation of non-economic data. The Department of Agricultural Economics was responsible for prescribing, analyzing and evaluating economic data.

Coordination was achieved by means of informal conferences among project personnel and through the extension research committee which met from time to time to review progress and to recommend policy decisions to administrators.

Objectives

The objectives of the study, as set forth in the project outline, are:

1. To appraise the effect of intensive extension methods in achieving desirable changes in farm organization, practices, farm income, and family living.

1/ On the basis of information from the statewide probability sample of all farmers, we estimated in 1957, that roughly 50 percent of Washington farm operators might participate in farm and home planning if given an opportunity to do so.

2. To appraise the relative effectiveness and estimate the unit cost of intensive extension methods as compared with the more extensive methods.

3. To evaluate the relative effectiveness of different procedures and techniques used in intensive extension approaches.

4. To evaluate the extent and the process by which new farm and home management techniques are diffused from families participating in intensive extension programs to the farm population at large.

5. To estimate the potential participation of farm families in the farm and home unit approach and other intensive and extensive approaches.

The Sample Design

After considering alternatives, we decided to regard current participators in farm and home development as the experimental group and to select a statewide control group of nonparticipators by probability methods.

Having made the decision, our plan was to interview the participators at the beginning and the end of a three-year experimental period (later extended to four years) and compare the changes in selected socioeconomic and attitudinal indicators with comparable changes in the control group of nonparticipators. We also included some experimental and matched control areas, not selected on a probability basis, for the express purpose of trying to obtain information about group methods of applying farm and home development techniques. We also made provision for interim studies of selected communities. These I will describe in greater detail later.

The plan which we adopted seemed relatively straightforward and simple and we anticipated no particular difficulty in its execution. However, numerous complications did arise.

The Benchmark Survey

Farm and Home Development Participators As I said earlier, we had hoped that there would be approximately 200 participators by the time we got into the field in December, 1955. As it turned out, there were only 91 that we considered to be eligible under the rules which we set up for our operations. This was partly due to the deviation of actual field operations from the design. For instance, we omitted those who were living in counties in which only one or two families were participating, because of the extremely high unit costs of obtaining data.

In Yakima County we included only those who started in 1955; about 25 there had started earlier, but we excluded these because they had entered while the method was still in the experimental state. Also, it was understood at the time that many of these early participators had been selected because they were considered to be problem cases and had not taken the initiative in seeking participation in farm and home development. In addition to these two categories, a few were not interviewed because they were not available after four call-backs when the interviewers were in their respective counties. Thus, 91 families, out of approximately 100 considered eligible for inclusion in the original sample, actually were interviwed.

The Control Groups It was our intention to select our control groups by probability methods. Actually we set up two sample designs: Sample A. to represent all families operating commercial farms in Washington and sample B. to represent young farmers - operators under 45 years of age.

The A. sample was designed to provide a basis for determining the ways in which farm and home development participators differed from families on commercial farms. (We found that they did differ in important respects.) We also used it to make an estimate of the potential demand for farm and home development in the State. It was in effect a probability sample of all families operating Washington commercial farms as defined by the 1954 Census.

With respect to the A. sample, we decided, after consulting representatives of the staff of the statistical laboratory at Iowa State University, that interviews would be required in 16 counties. The counties were selected after a random start by systematic sampling with probability proportional to the number of farms (excluding residential farms) in the county.

We drew several samples before accepting one which appeared to meet the tests of representativeness. We justified this with the argument that one random set is as random as another, but this view has since been criticized by a statistician. He argues that the first set must be accepted. If this is correct, it appears that our decision may have been in error. We made the decision without statistical advice, which points up the need for specialist aid on technical problems of survey design.

Yakima County, which is the county with the largest number of farms, was drawn twice and 14 other counties were each drawn once. Since we had taken cognizance of the unequal number of farms in each county in the selection of the counties, a uniform number of interviews per county was required. Accordingly, farmers in each of the selected counties were drawn from the personal property assessment lists available in the county assessor's office.2/

The B. sample was designed to provide a reservoir of cases to use in matching the participators. We expected that most of the farm and home participators would be young farm families as defined above. As it turned out, there were a number of participators over 45 years of age.

The B. sample of young farmers was also drawn in the same manner from the 15 counties selected for the A. sample. (Screening for age was done later.) We justified this on the grounds that these 15 counties appeared quite representative of the State as a whole on the basis of several characteristics available from the Agricultural Census of 1954. In addition, an important cost factor was involved, since the use of the same counties for the sample of young farmers was expected to decrease the field costs.

Actual selection of the control samples progressed with no important deviation from the plan. The total numbers of farm families interviewed in the control samples were 314 for the A. sample and 257 for the B. sample.

The Terminal Survey

It had initially been contemplated that a control group of approximately double the size of the experimental group would be re-interivewed in the terminal survey. However, during the planning for the terminal survey which was done while the writer

2/ See Morris H. Hansen, William N. Hurwitz and William G. Madow, Sample, Survey Methods and Theory, New York: John Wiley & Sons, Inc., 1958. pp. 341-345.

was in Pakistan, a decision was made on the advice of the Experiment Stations statistician to interview a considerably smaller number. He took the position that little additional statistical accuracy would be obtained from having more families in the control group than in the experimental group. Thus, the limiting factor was the size of the experimental group. As it turned out, more families were actually interviewed in the control group, and matching operations conducted subsequent to the field work demonstrated the value of having some additional cases.

Because the farm and home development participators were the key group, it was necessary to determine as accurately as possible which families from the benchmark survey were still in the State and still farming. To learn this, the county agents in all of the counties involved in the benchmark survey were sent lists of the families who were interviewed earlier and asked to find out whether each family was still at the same address, whether the operator was still farming, and to report the status of the family with respect to farm and home development.

This reconnaissance survey revealed that two of the 91 "original participators" actually had never participated and that only 64 of the 89 remaining were still farming. In addition, four farmers from the experimental areas and three from the random sample of the control group had gone into farm and home planning in 1956. A decision was made to include these seven with the 64 original participators. Still later, we found three others from the original 91 who were still farming, making a total of 74 in the terminal survey. It appears from our experience that agents in some cases were not well informed about the current circumstances of some of the families who participated in farm and home development in their counties.

As a preliminary to the field operations, two control groups were established, (1) a statistically matched control group and (2) a pair-matched control group.

Control group families who had left farming, who had moved out of the State, or who had joined farm and home development after 1956 were deleted. This left a total of 482 families. Matching operations were as follows:

The Statistically Matched Control Group Frequency distributions were made for participators and the control group on the following factors: (1) Length of time as a farmer, (2) education of operator, (3) level of living index, (4) age of operator, (5) education of wife, (6) SRAP "I" score for females, (7) SRAP "I" score for males, and (8) SRAP "E" score for males.3/ Extreme cases were eliminated from the control group as a result of these frequency distributions. That is, any cases in the matching deck in categories which contained no cases in the farm and home development group, were eliminated.

As a final step in the statistical matching, a table was made cross-tabulating education of operator with length of time in farming. It was then possible to determine how many from the control deck should be chosen to match the farm and home development participators in each cell of this table. Where there were more cases in the control group than in the experimental group, the control group was reduced by means of random numbers. However, some extra cases were left in the control group as a hedge against expected attrition.

3/ SRAP - Straus Rural Attitude Profile.
The "I" score reflects innovation proneness.
The "E" score reflects economic motivation.

Pair-matched Sample Each of the 74 farm and home development participators was compared with families from the random control group. These criteria were used for this comparison: (1) Type of farming, (2) net worth, (3) total assets, (4) age of operator, (5) level of living index, (6) education of operator, (7) social participation index, (8) off-farm wages or salary, (9) acres owned, (10) value of livestock, and (11) number of children at home.

Obviously, with so many items, a fairly wide margin of tolerance was necessary on some items in some cases. Two families might appear closely matched except on two or three factors. Close tolerance limits on all factors would, of course, have meant that few, if any, pairs would have been located. We call this a matched-pair sample but we are a long way away from the ideal of identical twins. As a result of the procedure 64 matched pairs were located. However, seven farm and home development participators and two from the control group could not be interviewed. This left 55 matched pairs.

Statistical tests show no significant differences except for education of the operator. Several of the participants had advanced degrees and we were unable to match these. We are planning to investigate the influence of formal education to see if it is as important as we hypothesize it to be.

Data Gathering Instruments In the construction of our data gathering instruments we attempted to include questions which would yield information necessary to achieve the objectives of the study as set forth previously. Although there was considerable similarity between the instruments used in the benchmark survey and the terminal survey, there was sufficient difference to justify separate treatment.

The Benchmark Survey

The forms used consisted of an oral interview schedule, a questionnaire for the operator, and a questionnaire for the wife. Schedule A., which contained the basic farm, home and family data, was divided into 12 main sections as follows: (1) Identification, (2) the farm, (3) the farm business, (4) farm business practices, (5) information contacts and needs, (6) community satisfaction and participation, (7) decision making processes, (8) about yourself and your family (characteristics of family members), (9) the home, (10) membership in organizations, (11) information, contacts and needs, and (12) interviewer ratings.

The questionnaires, which were handed to the farm operators and wives near the end of the interview, started out with the SRAP. This is a ten-minute forced choice test designed to measure the four variables, innovation proneness, rural life preference, primary group preference, and economic motivation. This test was designed by Dr. Murray A. Straus who was a member of the department at the time the study was designed.

The second part of both questionnaires consisted of knowledge tests. In the case of the farm operators, four separate tests were developed to provide questions appropriate to the diverse types of agriculture practices in different sections of the State. Each test consisted of 22 questions. Most of the knowledge questions were different in each of the four tests but a few, dealing with principles of farm management, were common to all four. For the wives, a single test, dealing with knowledge of recommended homemaking principles and practices and containing 21 questions, was used throughout the State.

The last section of both questionnaires consisted of a page of miscellaneous questions. This was included in the questionnaire to reduce the length of the oral interview and because it was felt that the nature of these questions made them particularly appropriate for a questionnaire type of format.

The Terminal Survey

Data for the terminal survey were also gathered by use of an interviewing schedule and a questionnaire for the man and another for the woman. The schedule was divided into the following sections: (1) Yourself and your family (characteristics of family members), (2) the home, (3) membership in organizations, (4) farming enterprise, and (5) wife's section.

Both the men's and women's questionnaires contained SRAP, a section on farm practices, opinions and information, and the knowledge test.

Almost all of the questions which were asked in the benchmark survey were also included in the terminal survey, but the organization of the schedule and questionnaires was changed somewhat. The order of asking the questions was rearranged in some cases. In some instances questions were moved from the schedule to the questionnaire to save time during the interview. Several questions were added in the terminal survey to cover changes which had taken place since the benchmark survey. Also added were some questions on decision making in the family, satisfaction with various areas of living, and the farm and home development program itself.

The knowledge test was also altered to some extent, since the Extension Service felt that some questions which would have indicated knowledge of new practices in 1955 could no longer be so considered. That is, some of the practices which were fairly new in 1955 were now either well established and should be general knowledge, or in some cases had been discarded for newer practices. Therefore, with the assistance of extension specialists, a new knowledge test was constructed. All the items from the old test which were still applicable, were kept; new ones were added where necessary.

In connection with this discussion of the data gathering instruments, it may be appropriate to note that we found it extremely difficult to construct what we considered adequate instruments for recording and evaluating such complex variables as family goals, values and decision making processes. We were able to gather some information about certain aspects of the decision processes, but, considering the extremely complex nature of interactions and factors involved, we do not feel that these do more than indicate some of the broad outlines of the patterns of decision making that are followed by farm families. We do not feel that we have an adequate basis for evaluating management processes. Consequently, evaluation must rest basically upon demonstrated progress or lack of it in terms of the end product rather than a processual type of analysis. We are forced to reply upon income, assets, net worth and other tangible indices of achievement.

Field Operations

It is one thing to sit in an office and make decisions on the basis of an ideal set of assumptions. Sometimes, however, particularly when field work is done in the

winter, as was the case in the benchmark survey, the realities do not square very well with the assumptions. We encountered many more problems during the course of the benchmark survey than we did during the terminal survey. Consequently, I will devote more attention to the former.

The Benchmark Survey

Problems which we encountered and decisions which we made in the selection and training of the interviewers, in the actual selection of sample families, and in the interviewing itself may be of interest.

Selection of Interviewers We debated at considerable length the question of whether to use a "permanent" staff of interviewers, moving them from county to county, or to utilize local people. In the end we did both. We also argued at considerable legnth the question of sex of interviewer. One of our group argued stoutly that male interviewers were essential for this survey because women simply would not know enough about farming operations to be able to handle the interviews successfully. However, we did employ interviewers of both sexes. At the close of the survey, it was conceded that the women did as well as the men.

We located our local interviewers with the assistance of local employment offices, county agent offices and other local influentials. Our three "permanent" interviewers were already known to us, having been employed previously on a department survey.

After recruitment of the interviewers, a training session was conducted in Seattle. Incidentally, two of our professional staff members did some interviewing before the field work was completed. Interviews east of the Cascades were done by these two, our three "permanent" interviewers, two graduate students, and one extension agent. The latter three were trained individually.

Interviewers were provided with a set of general interviewing instructions which they were required to study. In addition, classes were held during the training session and some actual interviewing experience was given. The interviewing instructions covered style of dress, how to approach farm people, how to deal with reluctant respondents, how to make appointments, how to conduct the interview, how to record responses, how to close the interview, and related matters.

Cost Factors We paid interviewers an hourly rather than a piece rate. We also paid mileage for the use of private cars by local interviewers. For our "permanent" interviewers we paid an hourly rate which was substantially higher than the rate paid local interviewers. In addition, we paid a subsistance allowance when they were in counties distant from their home stations and we provided State cars for their use. Obviously, the cost of using professional interviewers was considerably higher than the cost of using local interviewers.

One of the major problems which we encountered during the field operations was high interviewing costs. We found that we had almost exhausted our resources before we had completed more than half of the projected interviews. Fortunately, we were able to obtain additional funds so that we were able to proceed with the sample design substantially as planned. We found our field work more expensive than anticipated because we incorrectly interpreted our earlier experience and because of the unanticipated cost of screening interviewees to determine eligibility.

The screening interviews were not included because we had not clearly defined our target population at the time we made our cost estimates. Because of other commitments and uncertainty as to whether we would receive the grant from the W. K. Kellogg Foundation, we were unable to devote so much time to project planning as would have been desirable.

A considerable amount of the interviewing in the Columbia Basin survey, which we used as a basis for estimates, had been done by one of the professional members of the staff of the Rural Sociology Department and we had failed to include his salary in the unit costs. Obviously, this gave us an unrealistic cost base. Naturally, we were embarrassed to have to confess that we had grossly underestimated the cost of field work. This is a rather mundane but very important aspect of field research, whether funds are obtained from foundations or from other sources.

To provide a basis for estimating costs realistically, the Department of Rural Sociology maintains cost data covering various aspects of survey operations. These data are broken down so as to permit the construction of cost estimates covering interviewing, coding, and other phases of data processing. We had, of course, built up a considerable body of cost information prior to the submission of our cost estimates to the W. K. Kellogg Foundation and we are continuing this operation. Except for the experience that I have related above, our cost estimates have been fairly good.

Selecting the Sample We wished to have a probability sample of all commercial farm families and also a probability sample of young farm families as defined above. Therefore, it was necessary for us to devise some scheme which would give an equal chance of inclusion to all eligible farm families. We discovered that the personal property tax lists maintained in the county assessors' offices were the best available current listings. Consequently, names were selected from these lists.

We got information through the county agents in the sample counties concerning the number of pages in the county assessors' personal property lists (each page contained one name). We made an estimate of the number of names which we would have to select, then drew random numbers, preserving the order in which these numbers were selected. Following this, a staff member of the Department of Rural Sociology visited each of the counties and personally chose the names.

It was necessary to do this because the random numbers had to be applied by someone who could interpret the personal property information. The requirement was possession of livestock or agricultural machinery. Incidentally, in Washington, only personal property which has an income-producing potential is taxed. Thus, machinery, milk cows, sheep, and beef cattle are taxed as personal property, but living room furniture is not.

The first 20 eligible farmers were to be interviewed in each county for the statewide probability sample. Additional names were drawn for the sample of young farm families. Further screening was necessary to eliminate farmers over 45 in the B. sample. This was done initially through screening interviews which, of course, increased the field costs materially. Subsequently, other sources were used first, including voters' registrations, agricultural stabilization and conservation records, milk route driver lists, SCS office records, and other sources.

A substantial number of the interview schedules were given a preliminary editing in the field in time so that interviewers could be asked to supply missing

information. This also permitted the field supervisors to correct bad interviewing habits at an early date. This course was possible because of the availability of a highly competent individual in the person of the wife of one of our staff members, who accompanied her husband during the field operations.

Another aspect that may be of interest here was the use of questionnaires which were filled out by operators near the end of the interview. This procedure had been pretested in an earlier survey. We recommend it as a device for shortening the interview and for handling certain types of questions and tests. Of course, it can only be used with people who have fairly high educational attainments.

In order to facilitate the interviews, we sent introductory letters on the official letterhead of the department to each individual who was selected for interview. These letters were mailed just a few days prior to each interview.

The Terminal Survey

Because of the decision to interview a much smaller number of families in the terminal survey, field operations were very limited compared with those of the benchmark survey. We interviewed only 293, compared with 788 in the benchmark survey.

Again, local interviewers were engaged and trained. The training session for interviewers was held in Pullman and lasted four days. Three of the interviewers for the terminal study had been employed by the department previously, either on the benchmark survey or on some other survey.

Processing the Data Office operations have little of the glamor which is frequently associated with interviewing and certain other aspects of the data gathering. However, it is a crucial aspect of the methodology and deserves some attention. At Washington State University we have a computing center with an IBM 650 and other punched card processing machines which are utilized by the Department of Rural Sociology for processing data. In this study, we did not employ mark sensing, central interviewing, or other shortcuts which we sometimes use.

In the benchmark survey some of the completed schedules and questionnaires were given a preliminary editing in the field, as noted earlier. The final coding was done in the Department of Rural Sociology in Pullman. After assignment of codes, the coded information was punched into cards. From the benchmark survey we have 11 IBM punch cards of data for each family. In addition, we have prepared other decks containing regrouped data from the original cards, arranged for making cross tabulations.

During the early part of the interviewing for the terminal survey, professional staff members visited most of the interviewers in the field to check completed interviews, to point out errors and to answer questions. At the end of each week, the interviewers mailed all completed schedules and questionnaires to the department, where they were immediately edited. Any missing data and errors were noted and letters were written to the interviewers asking them to obtain missing information or to correct obviously erroneous information. Thus, a close check was kept on the interviewers with a minimum of field supervision. From the terminal survey we have nine IBM cards of data for each family.

We have constructed several indices and scales following more or less standard procedures. These include an extension contact scale, an index of family level of living, knowledge test scores, PMWU crop yield index, SRAP, and a social participation scale. These were constructed as follows:

Level of Living Index

One point was given for the possession of each of these items: Gas or electric range, dishwasher, electric mixer, refrigerator, home freezer, freezer locker in town, regular washing machine, ironer (mangle), automatic washing machine, clothes dryer, sewing machine, vacuum cleaner, piano, television, telephone, subscription to a farm magazine, piped hot water, bath or shower, flush toilet, closet in each bedroom, living room carpet or pile rug, and central heating or built-in electric heating.

In addition, the rooms-per-person ratio was weighted as follows and included in the index: Under 0.75, no points; 0.75 to 0.99, one point; 1.00 to 1.49, two points; 1.50 to 1.99, three points; and 2.00 or over, four points.

The index is the simple sum of these items.

Social Participation Index

The social participation index for the farm operator was computed as follows: A score of five was given for each public office he had held in the last five years. A score of three was given for each organization he attends regularly. A score of two was given for each organization he attends occasionally. A score of one was given for each organization in which he is a member but does not attend.

The organizations included in these last three considerations are: Farm Bureau, Grange, Farmers Union, Soil Conservation District, 4-H leader, commodity group, Co-op, lodge, veterans' organization, P.T.A., church and other.

These scores were added and the total score became the operator's social participation index score. A similar index was computed for the wife on the same basis as the husband's, except home economics or homemakers club was added to the list of organizations.

Operator Farm Organization Participation Index

A score of five was given for each agriculture connected public office held during the previous five years, such as DHIA director, director of drainage or irrigation, Soil Conservation District committeeman, etc. In addition, the scores of three for attending regularly, two for attending occasionally, and one for being a member but not attending were added to these public office scores, but only farm organizations were included. These organizations were Farm Bureau, Grange, Farmers Union, Soil Conservation District, 4-H leader, commodity group, and Co-op.

Extension Contact Score

This score was based upon the frequency with which the operator had had specified types of contact with the Extension Service during the previous year. The different types of contacts were assigned appropriate weights. The contact, "had an agent visit the farm about something" was multiplied by 15. The contacts, "visited a county agent's office," "talked to county agent on phone," "attended an extension demonstration," and "attended an extension meeting or discussion," were each multiplied by 10. The contact, "received a circular letter from the county agent," was multiplied by 5. The contact, "listened to an extension radio program," was multiplied by 2.

The reported frequencies were multiplied by the appropriate weight and the results were added to yield a weighted score for each operator. A similar process was followed for the wives.

We have already described the matching and sampling, which were essentially office processing operations. Consequently, we need not cover this ground again at this point, except to point out that we are planning to use the "matched pair" sample as our basic source of data for the final report.

For tests of statistical significance, we are using chi-square, the "t" test, the "F" test, and other tests as needed.

Because of the small size of the final N, potential errors attributable to sampling must be considered to be large. This places a severe limitation on the extent to which these data, obtained over a long period with much effort and great expense, can be generalized, This is, of course, unfortunate but, at this stage, there is nothing that can be done about it. The small N is due entirely to the relatively small number of families who became participators in farm and home development early enough to be included in the experimental group.

Even though the number is small, it does constitute a fairly substantial percentage of the total number who have participated in the farm and home development process in Washington. Farm and home development has never attracted large numbers of participants.

The Area Samples

In order to provide data for use in evaluating the application of farm and home development on an intensive basis in a local area, it was decided to select experimental areas within selected counties. These areas were matched with control areas in the same counties where no concerted effort would be made to promote farm and home development activities.

So far as data gathering instruments, field operations and office processing of the data are concerned, there is no difference between the area sample and the probability sample discussed earlier. Consequently, this discussion will be restricted to the unique aspects of the area samples.

It was our intention to delineate communities or natural social areas for experimental and control purposes. In our work plan for 1955-56 we said:

> ...the experimental and control communities will be selected as follows: (1) County extension staff and other persons will be consulted and, insofar as possible, the county marked off into community areas. (2) The areas so

delimited will be reviewed with the county extension staffs and a tentative selection of experimental and control communities selected. (3) A field survey will be conducted in the areas tentatively selected to determine if they possess sufficient unity to be considered communities for the purposes of this program.

During the first year of operations under the project, we selected experimental and control communities in three counties. The areas were selected and delineated by local extension personnel with the assistance of members of the staff of the Rural Sociology Department. Efforts were made to match the areas to be compared with respect to soil classification, type of agriculture, ethnic and cultural backgrounds, and community cohesiveness.

After delineation of the two areas in each county, one was chosen as the experimental area, the other the control area. In Clark County, all eligible farm families in the delineated areas were interviewed before any farm and home development work was undertaken. In Grant County, 50 percent of the families in each of the areas were interviewed. In both of these cases, the work was done in the winter of 1955-56. The interviewing in Kitsap County, however, was not completed until 1956-57 because of the limitation of funds for field operations.

In the terminal survey, all of the families in the experimental and control areas, who had been interviewed for the benchmark survey and who were still farming and living in the same area, were interviewed.

As in the case of the individual participators in the probability sample, there was some attrition. The number interviewed in each of the areas at the two periods follows:

	1955-56	1960
Clark Experimental Area	36	28
Clark Control Area	25	14
Grant Experimental Area	19	16
Grant Control Area	20	17
	1956-57	
Kitsap Experimental area	27	16
Kitsap Control Area	7	5
TOTAL	134	96

Interim Studies

In an effort to keep track of what was going on, we made an attempt to obtain from farm and home development participators an annual report of progress in which we stressed both achievements, changes in goals, and problems. This annual follow-up was not restricted to the experimental group, but covered all participators.

Cooperation was rather spotty. However, this is perhaps to be expected in a voluntary participation situation, such as farm and home development. We never did receive more than about a third of the reports that we potentially might have

received in any year. We did not ask that any special effort be made in respect to annual reports for the experimental group.

In order to gather depth type information, we decided to undertake some community case studies. We had initially contemplated that this work would be done in each of the experimental and control communities. We later decided that this was not possible with available funds, but we did make community case studies for five different areas in four counties. Two of the reports have been published.4/

The work was done by professionally trained personnel. Our first worker was a sociologist of European origin who did not have a quantitative orientation. The second was a cultural anthropologist. The methods utilized by both were essentially anthropological rather than sociological in character and tend to emphasize certain time perspectives and qualitative aspects which ordinarily are not covered by rural sociologists.

Our anthropological reports have been very well received by most of our extension workers and have contributed materially to our understanding of some of the problems encountered by rural people. Some of the insights and hunches which have been brought to our attention by our anthropologists will be useful in helping to orient our further research.

It does not appear, however, that these studies will be of material assistance to us in our major task of evaluating the effectiveness of farm and home development.

PLANNING AND DESIGNING EVALUATION RESEARCH

Frank Alexander asked for a statement on the implications of experience with the study for planning and designing evaluation research. I have interpreted this request as an opportunity to offer some general comments concerning the planning, designing and execution of evaluation research. Some of the points which I wish to raise for your consideration stem from our experience with this evaluation study; others do not. However, I think that, to a degree, all are relevant to this study.

Quick and Definite Results May Not Be Obtained

I believe that the results of educational policies and procedures cannot always be determined accurately or speedily. In some cases the influences of education may lie dormant for a substantial time or, even though put into effect, may not become manifest in results within a short period.

In the present study, the experimental period was four years, with a year for evaluation. Five years is a long time to wait for an answer, but it must be considered as a relatively short time in a lifetime career in agriculture. Some of the fundamental results of participation in farm and home development may not really show up except over a substantially longer period. This may not always be easily understood by administrators, particularly by those who come from the physical and

4/ Alicja Iwanska, Good Fortune: Second Chance Community, Wash. Agr. Exp. Stas. B. 589, June, 1958; and Angelo Anastasio, Port Haven, A Changing Northwestern Community, Wash. Agr. Exp. Stas. B. 616, May, 1960.

natural sciences, where results of experimental work may become discernable relatively rapidly. Consequently, we need to take steps to reach an understanding with administrators on this point.

Use of Experiment Stations Research Organizations

In Washington, the action phases of the farm and home development study were conducted by the Agricultural Extension Service. Most of the research activities, on the other hand, were conducted by the Agricultural Experiment Stations, specifically, the Departments of Rural Sociology and Agricultural Economics. In some States, I understand, the evaluation research involved was conducted by the Agricultural Extension Service itself. It is my opinion that evaluation of a complex method, such as farm and home development, is best accomplished by a team-work approach involving both Extension and Experiment Stations even though numerous problems are involved.5/

Theoretical Frame of Reference Is Essential

Even though evaluation research is applied research conducted for the purpose of assisting with the development of policies and procedures by an action agency, theoretical considerations should not be ignored. The development of an adequate and explicit theoretical frame of reference should precede detailed work on data gathering instruments or sample design. I say this because it seems to me that the theoretical and substantive considerations should largely determine other aspects of the design.

If we go ahead on the basis of a pressing practical problem without careful search of the relevant theoretical and substantive literature, we may find when we have completed our study that we have failed to examine latent aspects which are, in fact, more important to the proper solution of our problems than aspects which were manifest when the decision was made to proceed. This means, of course, that adequate time should be allowed for literature review, reconnaisance, discussion, and planning prior to final formulation of a research design.

Statistical Design

Evaluation by statistical means of social and economic policies and procedures is not easy. Experimental procedures may materially alter aspects of existing social systems and facets of the relevant culture other than those intended to be influenced. Consequently, it may be exceedingly difficult to isolate the actual effects of the experiment treatment from other changes constantly occurring in actual life. To do this satisfactorily, we need to set up sound experimental designs involving experimental and control groups with data obtained, if possible, both before and after treatment. We need to have adequate numbers to compensate for the inevitable attrition which must be expected in any experiment that runs over time

5/ See W. L. Slocum, "Sociological Research for Action Agencies: Some Guides and Hazards," Rural Sociology, Vol. XXI, No. 2, June 1956. p. 196-199.

Obviously, we need the best advice that we can get with respect to the statistical aspects of design. The advice of competent statisticians should be solicited, both in connection with the initial design and in connection with modifications which may seem essential during the execution of the experiment. However, in dealing with statisticians, even those who are available through the Agricultural Experiment Stations, caution must be exercised. Our experience has taught us that sometimes statisticians give advice which leads to undesirable consequences if accepted uncritically. Generally, this may result from the failure on the part of the statistician to understand clearly all of the nonstatistical aspects of the study.

Feedback and Publication

There should be a clear understanding between researchers and administrators with respect to feedback, publication, and other uses of data. If the research involves experiment stations personnel, such arrangements should be made explicit in a memorandum of agreement which can be referred to as necessary during the course of the study. If this is not done, misunderstanding and subsequent animosity may result We have had no difficulty of this kind in Washington, but I know of cases where serious misunderstandings have resulted.

In Washington, we have taken the position that information which we have collected is to be shared with the action agency. Thus, in contrast to the situation in some other States, we have had considerable feedback from the research to the action agency. It is probably true that this has operated to modify the program in some respects. However, it should be recognized that the program is continually being modified, anyway, and over a period, such as four or five years, this must be regarded as inevitable.

Certainly changes occur whenever there are changes in major personnel. Even if the same individuals continue in the program, their points of view will change as they encounter new situations. This is normal. So far as I am concerned, this is not something to be deplored. If we did not experience it, we should have great cause for alarm at the failure of our professional people to grow mentally. However, it does complicate our problem.

Realistic Cost Estimates

The decision to undertake a particular piece of evaluation research frequently involves balancing the cost of the research against the expected benefits. If it becomes necessary, as it did in our study, to have to ask for a substantial amount of supplemental money, the judgment of the estimator may be questioned, to say the least. The only way to arrive at realistic cost estimates, in my judgment, is to accumulate detailed data over a period of years as studies are made, and then use these data from experience as a basis for estimating costs in new situations.

Systematic Training and Supervision of Interviewers

Where interviewers are used, comparability of results and reliability of data can only be obtained through the use of systematic procedures for training and timely

supervision and correction of interviewers. Even this, of course, will not remove entirely errors of response, but such procedures will greatly improve the comparability of data. I will go so far as to say that if it were economically feasible, I would prefer always to use permanent professional personnel for interviewing.

Evaluation of Processes

The study which we conducted in Washington was not a study of the processes of farm and home development. Rather, it was an attempt to identify and evaluate the results obtained by the use of the process with an experimental group of farm families. If we are to move ahead with desirable social innovations, however, we need to study processes as well as results. We are not able to say that one method or procedure used in farm and home development is better than another with respect to any given criteria or standards. We are not able to say with any degree of precision that the farm and home development process has had such and such an effect upon the patterning of specific aspects of family behavior.

I wish we could afford to do more process research. If we move in this direction, we and our sponsors must both recognize that the costs are going to increase at a phenomenal rate. Furthermore, I doubt if we will be able to arrive readily at clear and definite conclusions concerning processes. As long as we are under pressure to produce results which appear to have immediate application to the solution of "practical" problems, we will find it difficult to devote very much time to process studies.

Use of Benchmark Data in Terminal Survey

Our experience indicates that if our interviewers had been given access to some of the earlier information we might have been able to resolve what now appear to be inconsistent answers. The biggest problem that we have found seems to be in relation to the evaluation placed on certain tangible assets, such as the value of land and buildings and the valuation of livestock and machinery.

More Lead Time for Planning Research

It is rare that really important results accrue from research undertaken on a crash basis. Time is required for literature review, identification of subject areas for study, and development of adequate data gathering instruments. Who should pay for this time? I am not sure. The answer may differ for different research projects.

For work to be conducted simultaneously in several parts of the country, it would be desirable to provide for an adequate exchange of views among the collaborators prior to formalization of the project.

Willingness to Try New Research Techniques

Only as we work with new experimental techniques will we be able to find ways to solve our increasingly complicated evaluation problems. In working with them, we must give increased attention to quality aspects of experimental design.

EVALUATION STUDY OF THE FARM AND HOME MANAGEMENT PROGRAM IN NEW YORK STATE: DESIGN AND METHODOLOGY 1/

James W. Longest and Frank D. Alexander 2/

INTRODUCTION

Nature of the Farm and Home Management Program

In New York State the National Farm and Home Development Program was designated, "The Farm and Home Management Program." The New York program was defined by a special committee in 1954 when a policy statement was prepared. In this statement the program was defined as follows:

> Basically, this expanded program is an educational program in management and decision making. It means an intensification, a concentration of effort, on the management and decision making phases of farming and family living. It implies an integrated approach, a unit approach to the problems of farm families. It means more individual, on-the-farm counseling and assistance than has been available in recent years.

The farm management phase of the program has focused on management of the farm business by emphasizing:

1. The keeping of accurate and rather complete farm business records. These have included records of inventory, receipts, expenses, and production.
2. Systematic analysis of these records for the strong and weak points of the business. Strong and weak points were defined by comparing to standards of the agricultural economists and to averages for all program participants in the county.
3. Alternatives for strengthening weak points and the total farm business according to the objectives, situation, and motivation of the operator and family involved.

DESIGN OF THE EVALUATION STUDY

Objectives

The objectives for evaluation of the farm and home management program in New York State were as follows:

1. Determine the relative effectiveness of the intensive county program using the farm and home unit approach and the present more extensive program.

1/ For a more complete presentation of this paper, including more detailed footnoting and tabular material, see: Report No. 9, same title, of the Office of Extension Studies, State Colleges of Agriculture and Home Economics, Cornell University.

2/ Respectively, Associate Administrative Specialist and Administrative Specialist, Extension Studies, State Colleges of Agriculture and Home Economics, Cornell University.

2. Determine the relative effectiveness of various ways of doing extension work with the farm and home unit approach.

3. Obtain basic input-output or cost-benefit data in order to determine the level of intensity at which optimum return results from the investment in extension education.

4. Develop some sound procedures and techniques for use in evaluating extension educational programs and other adult educational programs.

Selection of Counties for Study

By the spring of 1956, 20 counties had initiated farm management programs. From these, 10 were selected for inclusion in the evaluation study. The following criteria were used in selecting the 10 counties:

1. At least two counties should have Farm Business Management Clubs and one an area approach.

2. Each county should have at least 25 participants who had entered the program in either 1955 or 1956.

3. As far as was possible the 25 participants per county chosen for the study should have dairying as their major enterprise.

4. A properly executed Labor Income Blank No. 40, or comparable data, should be available on participants in each county to provide benchmark production and other economic information.

5. A maximum number of counties in which the home demonstration department had a program, or might be expected to have one, was sought.

6. A reasonable distribution of the counties over the State was sought.

Sampling of Participants

In six of the ten counties 25 participants were selected randomly. In the other four there were only 25 participants in the program at that time, so that all participants in those counties were included.

Selection of the Control Group of Nonparticipants

Limited resources prohibited setting up a control group in all ten counties. However, a partial control was set up by asking agents in six of the counties to match a nonparticipant operator and farm with each of the 25 participant operators and farms. The matching factors were:

1. Age of operator
2. Tenure of operator
3. Partnership
4. Major farm enterprise
5. Second rank farm enterprise
6. Number of milk cows
7. Full- or part-time operator
8. Soils (general opinion of county agent)
9. Managerial ability, as rated by county agent

Survey Instruments Used

Two questionnaires were designed to obtain the farm and home practices, general family characteristics, and personal characteristics of the operator and homemaker - one for the operator and one for the homemaker. Agricultural and home demonstration specialists assisted in making the respective questionnaires. In addition, Cornell Labor Income Blank No. 40, consisting of economic and farm business data, was completed for each participant and nonparticipant farm business. These instruments were used to obtain benchmark data in 1956 and terminal data in late 1959 for the homemakers and terminal data in the first half of 1960 for the operators.

Operations for Accomplishing Study Objectives

To accomplish the study objectives the following methods were used:

1. Benchmark and terminal surveys of participants and nonparticipants were made to provide basic data for comparison of changes in the two groups.
2. Annual surveys of programs in the ten study counties were made to obtain information on the nature of the program, exposure of the participants to selected subject matter, attrition in the participant and control groups, and extent of total participation. These data were obtained for the purpose of describing the program.
3. A survey was made of a locality program to determine its effectiveness for diffusing management practices learned in the farm and home management program. (In analyzing the data from this survey, sociograms were utilized to determine locality boundaries. Later, in the study of another area, the sociogram method was also used to form small study groups, which have proven to be effective settings for teaching farm and home management.)
4. Agent program time in-put per month and cost data (in the ten study counties) were obtained for estimating the cost of the program.
5. Contact records were kept by two agents and case records of the agents' knowledge of and work with the participants included in the study were obtained for the purpose of describing the program and for preparing analyses of individual cases.
6. A survey of extension administrators, supervisors, and specialists was made to ascertain their knowledge of and views about the program.

The data obtained from these operations have been used to prepare the following groups of reports - already published or forthcoming:

Interim Reports

1. "Adequacy of Sample and Control Group with Statement of Study Design," Report No. 1.
2. "Study of the Operations of the Farm and Home Management Program in New York State," Report No. 2.
3. "The Farm and Home Management Program in New York State as Known and Viewed by Extension Administrators, Supervisors, and Specialists," Report No. 3.
4. "A Case Study of the Educational Exposure of a Sample of 25 Families Participating in the Farm and Home Management Program in a County in New York State," Report No. 4.
5. "A Case Study of the Function of the Neighborhood in the Farm and Home Management Program," Report No. 5.

Terminal Reports

1. "Time and Cost In-put and Cost-benefit Relationship for the Farm and Home Management Program in the 10 Study Counties of New York State," Report No. 6.
2. "Evaluation of the Farm and Home Management Program by Participants and by Agents in the 10 Study Counties of New York State," Report No. 7.
3. "Changes in Farm Practices and Related Knowledge of Participants in the Farm Management Phase of the Farm and Home Management Program in the 10 Study Counties of New York State," Report No. 8.
4. "Design and Methodology," Report No. 9. (An expanded version of this paper.)
5. "Tabular Summaries of Data for 21 Randomly Selected Participants in the Farm and Home Management Program in New York State," Report No. 10.
6. "Business Factors Affecting Income Change for 87 Pair-matched Participants and Nonparticipants," Report No. 11.
7. "Changes in Homemaking Practices of Participants in the Home Management Phase of the Farm and Home Management Program in New York State," Report No. 12.

DEVELOPMENT OF FARM KNOWLEDGE AND PRACTICES TESTS

Introduction

The farm knowledge and practices tests were developed from a number of knowledge and practice questions in each of the following subject-matter fields: Farm management, dairy feeding, dairy breeding, dairy disease control, and forage and field crop production.3/ An attempt was made to give the questions a management orientation.

For these five subject-matter fields, seven tests were constructed for which scores were calculated. The tests were (1) farm management knowledge and practices, (2) dairy feeding practices, (3) dairy breeding practices, (4) dairy disease control practices, (5) agronomy practices for corn, (6) agronomy practices for oats, and (7) agronomy practices for hay and pasture.

In 1956, these tests were given to 250 farm operators who were participating in the farm and home management program and to a control group of 150 operators. The tests were repeated in 1960 with 204 participants and 107 nonparticipants.

These farmers tended to operate farms that were above the average of New York State commercial dairy farms on such factors as size of herd and gross farm income. They were definitely not a random sample of New York State commercial dairy farms. The sample of participant operators was drawn from a finite universe of participants who had volunteered to participate in the program. The control group of operators was roughly matched with 150 of the participants.

Knowledge and practices scores were calculated for each of the tests. These scores are used as summarizations of the degree to which the operators are following recommended practices in the respective subject-matter areas. The test on farm management is concerned with the operator's knowledge and practices. For the other

3/ For a listing of the items constituting each of these tests see the appendix section.

four subject-matter areas the tests primarily are measurements of practice adoption.

The tests attempt to cover the major factors in each of the subject-matter fields. They were constructed in this manner because early program objectives indicated that improvement of the management of all aspects of the farm would fall within the scope of the program. It was, therefore, necessary to develop tests which would cover a wide variety of subject-matter items in each major field.

Actually, the program agents did not work with every participant to improve all specific management practices. However, some of the practices were taught to almost all participants in all counties. The range was from almost all of the operators exposed to some recommended practices to few or none exposed to others.

Except for the general focus in all counties upon record keeping, business analysis by use of these records, and a few other practices, the county agents conducting the program differed with respect to subject matter upon which emphasis was placed. For these reasons the differential in change from initial to terminal scores for the participants and nonparticipants could not be expected to be so great as it might have been if the program and the tests of its results had focused on a more limited number of practices.

This is not intended to imply that the program should have had a narrower focus. On the contrary, to the extent that record analysis revealed weaknesses with which the agents then helped the operators who had these weaknesses, the overall benefit from the program may very well have been greater than if the agents arbitrarily had taught all operators selected knowledge and practices, irrespective of their needs.

Construction of Tests

One or more specialists in each of the five subject-matter fields were asked to assist in preparing a questionnaire to measure level of performance in their fields, with special attention to management. These questionnaires were revised to meet acceptable standards for such an instrument and then pretested, and again revised, before being used in the study.

Construction of knowledge and practices tests from the operator's questionnaire was begun after the benchmark survey data were obtained. Each specialist was consulted and asked:

1. To indicate the practices that would apply to all dairy farm operators. This resulted in the elimination of a few questions which were not universally applicable to all dairy operators.
2. To indicate those questions for which the answers would differentiate adequately among operators on recommended management knowledge or behavior. Those questions which in their judgment would fail to show differences among the operators in the various subject-matter fields were eliminated as test items.
3. To weight the questions which were retained so that those most crucial to good management would receive the highest number of score points.
4. To assign appropriate values to each of the multiple answers of those questions having multiple answers. All questions used had either dichotomous or multiple (three or more) answers. For questions with dichotomous answers, the correct answers received the total weighted value for the question. But, for

multiple-answer questions, the value for answers varied, with the most correct answer receiving the highest value (total weighted value) assigned to the question.

After the score values were assigned, scores for a number of operators from each of the ten study counties were calculated. The specialists who had assisted in developing the tests and one or more specialists from the same discipline were asked to rank about ten of these same operators on management in their respective subject-matter fields. They ranked these operators on the basis of the answers given to the questions. These ten operators were selected about equally from the top, middle and lower sections of the score range of the operators whose scores had been calculated.

The rankings of these specialists were compared to one another and to the rank of the calculated score for the operator. Where differences of any significance occurred between the specialists' ranks, or between the specialists'ranks and those of the calculated scores, the ranks and score weights were reviewed and a final decision was made as to acceptable weights. Differences of notable magnitude occurred in only two or three cases, but the specialists were able to reach agreement in each instance.

The raw scores received by the operators for each of the seven tests were converted to percent of total possible score. This provides for comparison of different score levels achieved on different practices by the same and different operators.

Validity

Validity of a knowledge and/or practices test is defined as the degree to which it measures what it is intended to measure. Therefore, the questions of power of discrimination and reliability (consistency of measurement) are not parts of validity. However, they are closely related and define desirable characteristics of a test and its score. Thus, an item within a test (or the entire test) may measure what it is supposed to measure and, therefore, have high validity, but may not necessarily discriminate between persons as to quality of achievement nor yield high reliability. This is not to deny that the power of discrimination and reliability are important to the true value of a test as a tool for research or application, but it should remain clear that these factors are not a part of validity.

The validity of these tests rests solely upon the ability of the cooperating subject-matter specialists to specify the content of their fields relevant to management of a dairy farm. There is general agreement by specialists in the respective fields, other than those who stated the original questions, that the items do test relevant subject matter. Lack of an outside criterion, which is known to be valid and reliable, prohibited testing the validity of the test scores by their correlation with such an outside criterion.

In a sense, the tests may be considered self-validating, since they may be roughly classified as achievement tests. That is, the specialists indicated the levels of performance expected of farm operators if they are to be scored high in following recommended practices. Moreover, some of these same specialists have influenced significantly the teaching content of the program, so that it has emphasized certain of the recommended practices appearing in the tests.

Discrimination of Items

As indicated earlier, the specialists were asked to assist in selecting items (questions) which would discriminate. In this way the total field of subject matter was narrowed to those items that were judged to have discriminatory power as well as validity.

In addition to specialist judgments concerning discriminatory power, items were tested by the D-index.4/ This index tests the discriminatory power of the items by use of the number of persons in upper and lower groups who answered the item correctly. The upper and lower groups in this case were the upper and lower quarters. To apply the D-index, all of the test items were rescored on the basis of a dichotomous pass-fail split. The D-index was applied to the initial survey data (1956) for 400 interviewees (consisting of 250 participants plus 150 nonparticipants). The D-indexes and the percent of operators who passed items were used to decide items to eliminate from the tests.5/

Some items which, according to the D-index were low on discriminatory power and high on percentage of operators passing and, therefore, usually would have been eliminated, were left in the tests. This was done if the item was one which it was thought would discriminate when applied to a random sample of all commercial farmers in the State rather than to this group of operators who are somewhat homogeneous, but nonrepresentative, since they are above the average of the State's operators on several important variables.

Reliability

Reliability is defined as the consistency with which a test measures what it is measuring. There are three generally recognized types of methods for testing reliability: (1) The retest method, (2) the alternate-forms method and (3) internal consistency (split-half, etc.) methods.

The first two of these methods were not possible because the test items for scoring were not selected from the questionnaires until the interim period between the benchmark and terminal surveys. Moreover, the study budget would not have allowed for administering a retest or an alternate-form test. This left as an alternative the use of some type of internal consistency test. However, from a strictly methodological point of view, because of various characteristics of the tests, to be explained below, the retest method, rather than one of the internal consistency methods, would have been the most appropriate method for testing the reliability of the tests used in this study.

4/ The D-index formula is: $$D = \frac{U - L}{N}$$

where: U = the number in the upper group who answer the item correctly
L = the number in the lower group who answer the item correctly
N = the number in either the upper or lower group (N of upper always equals N of lower)

5/ The D-index for each item retained and the percentage of the 400 operators who passed each item are given in tables 1-7 in the appendix section.

Reliability Formulas Used

The formulas used for testing internal consistency were Kuder-Richardson 20 for all tests, except the three agronomy tests, for which the Dressel modification of Kuder-Richardson 20 was used. The Spearman-Brown prophecy formula for predicting reliability of tests for assumed specified lengths was then applied to the reliability coefficients to determine reliability coefficients where the assumed length was set at 25 items for all seven tests. This yielded more comparable reliability coefficients by eliminating differences arising from the varying lengths of the tests.6/

Application of these formulas required rescoring on the basis of a dichotomous pass-fail split for all of the test items. Thus, for test purposes, all items in all of the tests, except the agronomy tests, were weighted equally. Therefore, except for the agronomy tests, the original weights were not utilized in testing for reliability.

After each item entering the agronomy tests was scored pass or fail, weights were applied which were proportional to the original weights. This was done because of the small number of items in the agronomy tests. Accordingly, for the agronomy tests the Dressel modification of K-R 20 was used. The modification permits the testing of tests whose items have weighted values.

The tests, as indicated later, do not meet the assumptions of a unifactor test with parallel items upon which the Kuder-Richardson formula is based. It is, therefore, recognized that some bias enters into the reliability coefficients reported here because the characteristics of the test do not meet the assumptions of the reliability test used. Even so, it is believed that the coefficients are indicative of the levels of internal consistency of the various tests.

6/ These formulas are as follows:

Kuder-Richardson formula 20:

$$r_{tt} = \frac{n}{n-1} - \frac{\sigma_t^2 - \Sigma pq}{\sigma_t^2}$$

Dressel modification of K-R 20 for a weighted score:

$$r_{tt} = \left(\frac{n}{n-1}\right)\left(\frac{\sigma_t^2 - \Sigma w_i^2 piqi}{\sigma_t^2}\right)$$

Spearman-Brown prophecy formula for reliability if all tests were a specified length:

$$r_{nn} = \frac{nr_{tt}}{1 + (n-1)r_{tt}}$$

Where n = the number of times the test is lengthened.

Results of Testing for Reliability

The reliability coefficients obtained by use of the K-R 20 formula and the Dressel modification of K-R 20 are low for the dairy disease control, oat, and corn practices tests. The remaining four tests have only what might be termed moderately low reliability coefficients, since 1.0 would be the highest possible reliability coefficient that could be obtained by these two formulas. (See table 1.)

The Spearman-Brown prophecy formula was used to indicate what the reliability coefficients would be if all scores consisted of 25 items (table 1). These r_{nn} values indicate that, if additional items were added to the shorter tests, the coefficients would be improved considerably.

At present, the reliabilities of the tests are low. This is particularly crucial when they are to be used in measuring differences. However, even with low reliabilities, it is believed that the use of the test scores as summaries of the operators' practices levels in general subject-matter areas is to be preferred to the use of numerous separate knowledge and practice items.

Factors Contributing to Low Reliability Coefficients

These tests consist of relatively few items. Two tests were derived from 20 or more items - 23 and 25 respectively for the dairy feeding and farm management tests. The other five tests are based on 5 to 8 items each. A test with only a few items may be expected to have a low reliability coefficient when an internal consistency method of testing is used.

Table 1. Reliability Coefficients for the Practice Scores as Calculated by the Kuder-Richardson Formula 20, the Dressel Modification of K-R 20, and Spearman-Brown Prophecy Formula for Tests of a Constant n Length (r_{nn}).

Type score	No. of items in the score	r_{tt}	r_{nn}
Farm management knowledge and practices score[a]	25	.38[b]	.38
Dairy feeding practices score	23	.49[b]	.51
Dairy breeding practices score	8	.40[b]	.68
Dairy disease control practices score	6	.17[b]	.46
Agronomy practices for corn	5	.19[c]	.54
Agronomy practices for oats	5	.31[c]	.69
Agronomy practices for hay and pasture	7	.41[c]	.71

a Practices scores are percent scores
b Kuder-Richardson formula 20
c Dressel modification of K-R 20

It is also generally accepted that the more heterogeneous the group tested the higher will be the reliability coefficient. It is believed that the operators in this evaluation study form a relatively homogeneous group compared to what would be achieved by a random sample of all commercial farm operators. Thus, the relatively homogeneous character of the group tested can be expected to have lowered the reliability coefficients.

Finally, the types of knowledge and behavior which contribute to management are many and varied. Types of knowledge and behavior which are measured by these tests, and are believed to be management factors, include: (1) Knowledge as to correct practices and the relative strengths and weaknesses of the farm business, (2) planning for and completing certain practices at the correct time (hay harvesting, etc.), (3) selection of practice or material applied according to conditions existing on the operator's farm (variety of seed, analysis of fertilizer, etc.), (4) recording of data needed for planning and control (herd data, production rates, expenses, etc.), (5) ability to evaluate the farm business for levels of efficiency, and (6) ability to see the relation of individual factors to the total farm business. Other factors, such as ability to coordinate and place priorities upon the work to be done in the various parts of the business, are measured indirectly. This listing of management knowledge and behavior factors should not be interpreted as exhaustive, either of those included in the tests or in various theories of management.

Thus, these tests, which were developed to measure management related knowledge and practices in each of the subject-matter fields reflect the great variety of factors involved in the management function. The management factors measured by any particular test are distributed unevenly among the items composing the test. Thus, some items in a test measure several factors while others measure only one factor. This heterogeneity of factors measured by the various items of the tests should be expected to yield low reliability coefficients. Some of the tests undoubtedly are more affected by this heterogeneity than others.

The above factors contributing to low reliability coefficients include (1) relatively few items in the tests, (2) a relatively homogeneous group tested, and (3) heterogeneity of factors measured in any one test.

ADEQUACY OF ORIGINAL SAMPLE AND CONTROL GROUP

Test of Representativeness of the 1956 Sample

There was no significant difference (chi-square and .05 level for significance) between sample and universe participants on selected variables. These variables included tenure, major farm enterprise, size of herd, farm receipts, capital investment, age of farm operator, and member of the Agricultural Extension Service. It was concluded that the sample of 250 is reasonably representative of the finite universe of 709 participants.

Test of the Group Match of 150 Participants with 150 Nonparticipants

Matching Variables As reported above, the agents in six counties were each asked to match the 25 participants with 25 nonparticipants. The test of this matching was not attempted on the basis of the differences between each pair. The test used was the chi-square test of the differences between the distributions of the 150 participants and nonparticipants.

The match variables were age of operator, tenure, partnership, major enterprise, second rank enterprise, number of milk cows, full- or part-time operator, managerial ability, and soils of the farm as judged by the agent. There were no data to check the match of soil types. Managerial ability, as indicated by 1956 farm management score, was the only match variable upon which there was a significant difference between participants and nonparticipants.

Selected Social Variables The chi-square test also was used to test the similarity of the matched participants and nonparticipants on the factors of education, participation, contact with Extension, number of persons in biological family at home, stage in family cycle, and residential mobility. On three of these six social variables the two groups were not significantly different, but on the other three, i.e., education, participation, and contact with Extension, they were significantly different.

However, on the contact with Extension variable, the difference was unavoidable, since the participants had entered the program and were attending meetings, etc. Their contact with Extension scores were affected immediately. Therefore, it was not possible to obtain an adequate benchmark measure of their contact with Extension.

Scores for Farm Practices The farm practices scores included those for farm management, dairy feeding, hay and pasture, dairy breeding, dairy disease control, corn, and oats. The two groups were significantly different on scores for farm management, oats, and hay and pasture practices, with the participants having higher average (mean) scores in each instance.

Economic, Production, and Efficiency Factors The economic and efficiency factors that were tested for differences between the participants and the nonparticipants were net farm income per operator; labor income per operator; pounds of milk sold per man, and per cow; man equivalent work units per man; machinery, and feed expenses per cow; average inventory; and acres of land operated. The groups were significantly different on net farm income per operator and labor income per operator, with the participants having higher averages (means) in each instance. Pounds of milk sold per man, although not significant, was different enough to warrant attention.

Summary

The chi-square test of significance of difference was used in testing representativeness of the sample of participants and matching of participants and nonparticipants.

The 1956 sample of participant operators (250)was found to be representative of the finite universe (709) from which it was drawn.

Eight variables were tested for adequacy of matching of the 150 participant and nonparticipant operators. On 7 of these 8 variables they were found to be adequately matched. Twenty-two additional relevant variables were tested for defining the similarity between the 150 participant and nonparticipant operators. The groups were not significantly different on 14 of these.

The variables for which the differences between participant and nonparticipant operators were significant were farm management score, education, participation,

contact with Extension, oat practices score, hay and pasture practices score, net farm income per operator, and labor income per operator.

While only 8 of the 30 factors tested were significantly different, most of these factors were important and made it imperative that adjustments be made to control these differences. Another section of this report will discuss the procedures for avoiding these differences by pair matching of each nonparticipant with a participant.

ATTRITION OF PARTICIPANTS AND NONPARTICIPANTS: 1956-1960

During the period of the study, the sample of 250 participants experienced a total attrition of 18 percent. (Table 2.) The control group of 150 nonparticipant had a total loss of 28 percent. (Table 3.) This attrition left 107 nonparticipant and 204 participants available for matching. (Table 4.)

Table 2. Reasons for Attrition From the Sample of 250 Participants: 1956-1960

Reason for attrition	Number	Percent (N=250)
Stopped farming	24	10
Refused interview in 1960	12	5
Dropped from program with only about 1 to 1-1/2 years exposure	6	2
Change in management of farm (3) and other (1)	4	1
Total loss	46	18

Table 3. Reasons for Attrition From the Control Group of 150 Nonparticipants: 1956-1960

Reason for attrition	Number	Percent (N=150)
Stopped farming	18	12
Refused interview in 1960	6	4
Became a program participant	17	11
Other[a]	2	1
Total loss	43	28

[a] One was discarded because of insufficient data and the other changed farms in the terminal year, which destroyed the possibility of calculating comparable change data for that operator.

Table 4. Number of Participants and Nonparticipants Available for Match After Attrition: 1956-1960

Type of data	Participants	Nonparticipants
Number interviewed in 1956	250	150
Attrition: 1956-1960	-46	-43
Number available for match 1960	204	107

The primary reason for the higher attrition for the nonparticipants was that 17 (11 percent) of the 150 nonparticipants became participants in the interim between the 1956 benchmark survey and the final survey in 1960. This illustrates the consequence of not having complete experimental control over the control group. More disturbing is the possibility that this type of attrition biases the remaining group more than other forms of attrition might.

PAIR MATCHING OF PARTICIPANTS WITH NONPARTICIPANTS

Introduction

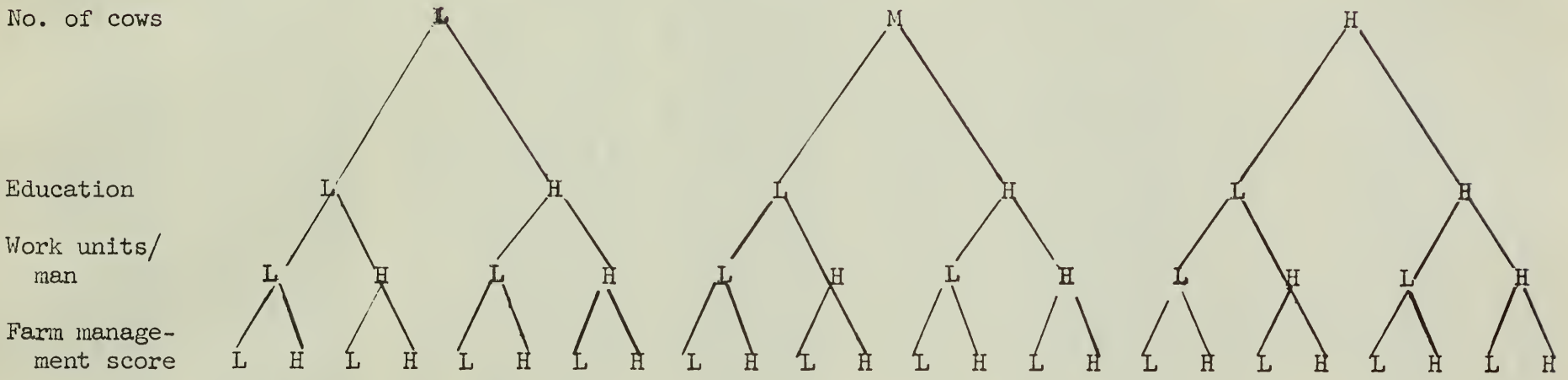
The failure to match the original sample of 150 participants with the 150 nonparticipants on several important variables, and the attrition from the sample of participants as well as from the control group of nonparticipants, required a rematching of the residue of participants and nonparticipants. While this procedure resulted in unequal numbers from each county, it was thought that the resulting pair matches would yield a match that would be much more refined than the original.

This is especially true since more accurate data on a greater number of variables were available for use in matching. Moreover, in view of the more adequate data available for rematching, it was both possible and desirable to use a t test, which utilizes differences of each matched pair and which has built into it a correction for correlation between matched groups. A t test of this nature yields refinements of statistical treatment which may, in part, compensate for attrition and loss of equal numbers from each county.

Matching Procedure

Preparation for pair matching was made by IBM sorts of participants and nonparticipants into 24 subgroups each by consecutive sorts on number of cows (high, medium, low), education of operator, work units per man, and farm management score (each into high and low groups). These consecutive sorts and the resulting 24 groups are diagramed in figure 1. As can be seen, none of the 48 cells are empty.

These four variables were chosen as ones which might be correlated with the seven other factors which were to be used as matching variables. Given this assumption of correlation, ordering of these four would also tend to order the seven other variables. The 11 match variables were: Number of cows, education of the operator,



Type of data	Low, medium, and high categories																							
Group No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Composition of each group:																								
No. of cows	L	L	L	L	L	L	L	L	M	M	M	M	M	M	M	M	H	H	H	H	H	H	H	H
Education	L	L	L	L	H	H	H	H	L	L	L	L	H	H	H	H	L	L	L	L	H	H	H	H
Work units/ man	L	L	H	H	L	L	H	H	L	L	H	H	L	L	H	H	L	L	H	H	L	L	H	H
Farm management score	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H
Frequencies																								
Participants	14	11	1	4	16	14	13	13	8	5	3	7	13	15	9	20	4	11	1	7	6	20	8	27
Nonparticipants	19	3	1	4	10	6	4	4	9	7	4	5	6	4	5	8	9	3	8	6	2	5	9	9

Figure 1. Illustration of the IBM Routine for Sorting Operators into 24 groups According to Number of Cows, Education, Work Units/Man, and Farm Management Score, so That the Participant and Nonparticipant Operators in Any One Group Have a Similar Relationship of Levels on All Four Variables.

work units per man, age of operator, Chapin social participation score, labor income per operator, farm management knowledge and practices score, dairy feeding practices score, agronomy practices score, hay and pasture practices score, dairy breeding practices score, and dairy disease control practices score.

An IBM listing was made of the 11 match variables for each operator in the 24 groups of participants and nonparticipants. The 1 through 24 order of the groups was maintained so that the participant operators and nonparticipant operators in each of the 24 groups showed up opposite each other in their separate listings. After these listings were available, the pair matching began. The data were listed by interval code categories. Since the nonparticipant control group was the smaller group, the matching proceeded by attempting to find a participant to match each nonparticipant. Matching was accomplished by finding a match which had the same code, or as nearly as possible the same code, for each of the 11 match variables.

For various reasons, the 107 nonparticipants, available when matching began, were reduced to 100 for statistical testing of the match. An additional reduction of the 100 matched pairs was required in order to obtain an adequate match on labor income per operator and farm management score. A statistically adequate match was attained by eliminating 13 matched pairs which had the largest deviations on these two variables. This reduced the deviations to the point where the differences between participants and nonparticipants were not significant for labor income per operator and farm management score. This left a total of 87 matched pairs to use for testing the differences in changes made by the participants and those made by the nonparticipants.

Test of the Match Between 87 Paired Participants and Nonparticipants

The statistical test used was the t test which utilizes the difference between each matched pair and the correlation between the two groups. The basic formula may be expressed as follows:

$$t = \frac{M_d}{\sqrt{\frac{\Sigma x_d^2}{N(N-1)}}}$$

where:

M_d = means of the N differences of paired observations.

x_d = deviation of a difference from the mean of the differences.

The exact numerical differences were used in making the t test to check the matches. This is noted because it is a more exacting test than it would have been if the code interval values had been used for the tests as well as for the matching procedure.

The t test was applied for the 11 matching variables and seven other important variables to check adequateness of match. The latter are carried through because of their relevance for analyses of the changes in farm business factors. The results of these tests are shown in table 5.

Table 5. Significance of Differences for 11 Match Variables and for 7 Other Variables Between 87 Matched Pairs of Participant and Nonparticipant Operators.

	Benchmark means[a]		Difference between means	Probability level
	Participants	Nonparticipants		
11 match variables:				
Social participation score	59.0	48.4	10.6	.001
Education	11.3	10.7	.6	.01
No. of cows	31	32	-1	.20
Hay and pasture score[b]	54.5	49.3	5.2	.02
Farm management score[c]	62.9	61.5	1.4	.20
Dairy breeding score	76.5	73.7	2.8	.20
Labor income/ operator	$1938	$1774	$164	.30
Work units/man	309	318	-9	.40
Dairy disease control score	62.9	63.9	-1.0	.70
Dairy feeding score	61.2	61.2	0	1.00
Age	43.6	43.6	0	1.00
7 nonmatch variables:				
Average inventory	$35,621	$39,207	-$3,586	.10
Machinery expense/cow	$102	$97	$5	.30
Feed expense/cow	$91	$95	-$4	.60
Lbs. milk/cow	8500	8393	107	.70
Acres operated	246	239	7	.70
Man equivalent	1.8	1.8	0	.80
Lbs. milk/man	152,816	153,333	-517	1.00

a. Labor income and farm business variables are from 1955 labor income data, while personal characteristics and farm practices scores are for the year 1956.
b. Practices scores are percent scores.
c. The farm management score includes both knowledge and practices questions, while the other scores are obtained from practice questions.

Eight of the 11 variables were not significantly different (.05 level). However, four of these eight, although not significant at the .05 level, had probability levels of .30 or better. These were: Number of cows, farm management knowledge and practices score, dairy breeding practices score, and labor income per operator.

Three of the matching variables had statistically significant differences between participant and nonparticipant pairs. The three were social participation, hay and

pasture practices score, and education of operator. Of the seven other variables used for further testing the adequacy of matching, machinery expense per cow and average inventory were the only ones with probability levels approaching significance, .30 and .10, respectively.

Influence of Match Differences on Differences in Mean Change

There are two basic issues involved in considering the influence of benchmark differences on differences in mean change. The first is the fact that the numerical value of the benchmark difference, if any, is not included in the difference in change that is tested. The second is that the influence of benchmark differences and the influence of program treatment upon differences in change are confounded in testing differences in change.

The difference in change for each pair was calculated by first finding the difference between the 1956 and 1959 values for each participant and each nonparticipant and then finding the difference between the change of each participant and his match nonparticipant.7/ The mean difference in the change of participant and nonparticipant pairs was tested for significance, using two-tail or one-tail tests as appropriate.

The numerical value of the benchmark difference is not included in the difference in change that is tested. If the benchmark difference were a part of the difference tested, the test would not be a test of change difference because the difference tested would contain the change difference plus whatever match difference had existed. This would invalidate the test as a test of change difference.

Furthermore, it would not be a test of the combined influence of program and benchmark difference. The reason for this is that neither the magnitude nor the direction of influence of a benchmark difference is indicated by the magnitude and sign of the benchmark difference. Hence, only the net difference in change is tested. However, the influence, if any, of the benchmark difference, as well as the influence, if any, of the program treatment, affects the magnitude of the difference in change. When benchmark difference and program influence both affect the magnitude of the difference in change, the t test does not reflect program influence alone, but also any plus or minus influence of a benchmark difference that may exist. The cause of the net difference in change is, in these cases, a combination of benchmark difference and program influence. The t test does not say anything about the influence of each, but only the end result of the two as they are reflected in difference in change.

In some cases the magnitude of a difference in change may have been depressed by the benchmark difference, and in other cases increased. For example, for the farm management score and labor income per operator, the amount of change that occurred

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7/ Difference in change was calculated by:

$$(P_T - P_B) - (NP_T - NP_B) = \text{difference in change}$$

where: Sub T = terminal year value
Sub B = benchmark year value
P & NP = participant and nonparticipant, respectively

was inversely proportional to the benchmark level for both participants and nonparticipants. Moreover, the benchmark level of nonparticipants was somewhat lower than that of the participants on both of these variables. Therefore, the effect, if any, of the benchmark differences on these two variables was to increase the change of the nonparticipants more than it would have been if they had been at the same level as the participants. Therefore, it is possible that the difference in change was not so great as it would have been if there had been no benchmark difference between participants and nonparticipants. This makes it important to interpret benchmark influence whenever the benchmark differences are large enough to affect substantial differences in change.

Analysis of Selected Match Differences and Characteristics

Some perspective on the number of matched pairs, which caused the significant differences listed in table 5, can be gained by elminating pairs where the differences are greatest until the mean differences are no longer significant. For example, the mean educational difference of the matched pairs in 1956 was significant at the .01 level. (Table 6.) By eliminating 13 pairs where the difference on education favors the participant by three to six years, the distribution on education levels out so that there are about as many pairs with the participants having the indicated number of years more education as there are pairs with the nonparticipants having the lead.

Table 6. Distribution of Pairs According to Years of Difference in Eudcation Between Participants and Nonparticipants by Three Classes of Pairs, i.e., Pairs Having Same Education, Pairs Where Nonparticipants Have Higher Education, and Pairs Where Participants Have Higher Education

Difference in years of school between P & NP match	Frequency of pairs where:			Reduction of differences by eliminating 13 pairs where P was ahead of NP	
	P & NP have the same education	NP has the higher education	P has the higher education	Pairs eliminated	Revised-P has the higher education
0	30	-	-	-	-
1	-	12	10	-	10
2	-	5	7	-	7
3	-	2	8	6	2
4	-	2	7	5	2
5	-	-	1	1	-
6	-	1	2	1	1
	30	22	35	13	22
Total pairs	87			74	
Level at which differences are significant	.01			.50	

This action reduces the significance level from .01 to .50. Since a perfect match could not be attained, this device improves the group match considerably. This conclusion is substantiated by noting how the differences resulting from this

method are minimized throughout the range, rather than at the extremes, as might result from another method of reduction. For example, the ten occasions where participants have a one-year lead over their match nonparticipants and the 12 occasions where the one-year difference is in the opposite direction balance out as follows:

Distribution for years of school completed where participants lead by one year:

	Years of school completed						Total
Participants	9	10	11	12	13	14	-
Nonparticipants	8	9	10	11	12	13	-
Frequency	1	1	3	2	2	1	10

Distribution for years of school completed where nonparticipants lead by one year:

	Years of school completed							Total
Nonparticipants	9	10	11	12	13	14	15	-
Participants	8	9	10	11	12	13	14	-
Frequency	1	-	2	4	3	-	2	12

Thus, the differences are perhaps not of so much consequence as they would have been had all of them occurred at the top three or four levels.

The lack of consistency in characteristics and levels of achievement for all 11 match variables for any one operator deserves attention. This lack of consistency is illustrated by the successive sorts for "pure type" (operators who are either low or high on all four variables) categories made in preparation for pair matching (Figure 1.) It should also be noted that both the high and low categories covered wide ranges so that achieving the status of a "pure type" was not a particularly rigorous test of level consistency on these four variables.

In general, pair-matching experience confirmed that the variation in level from variable to variable for any one operator is as characteristic of the 11 variables as of the four. Thus, the matching task usually was one of finding a participant and a nonparticipant operator with similar patterns of variation on the 11 variables, rather than finding two operators who were consistently low or high on the 11 variables. At any rate, this method became necessary when a preliminary examination of operator profiles indicated there would not be enough cases per profile type to provide an adequate base for analysis.

The variations in level from variable to variable for the matched pair that is charted in figure 2 are rather extreme but are somewhat typical of the variations for the average matched pair. The difference between the two matched operators on each of the variables is also apparent in this example.

The variations in level from variable to variable for the same operator which was encountered in the matching process indicated low correlations between pairs of the 11 variables. This observation confirms the necessity of matching on as many variables as possible when trying to match farms and farm operators simultaneously. On the other hand, if high correlations between variables had been present, an adequate match could have been attained by matching on fewer variables.

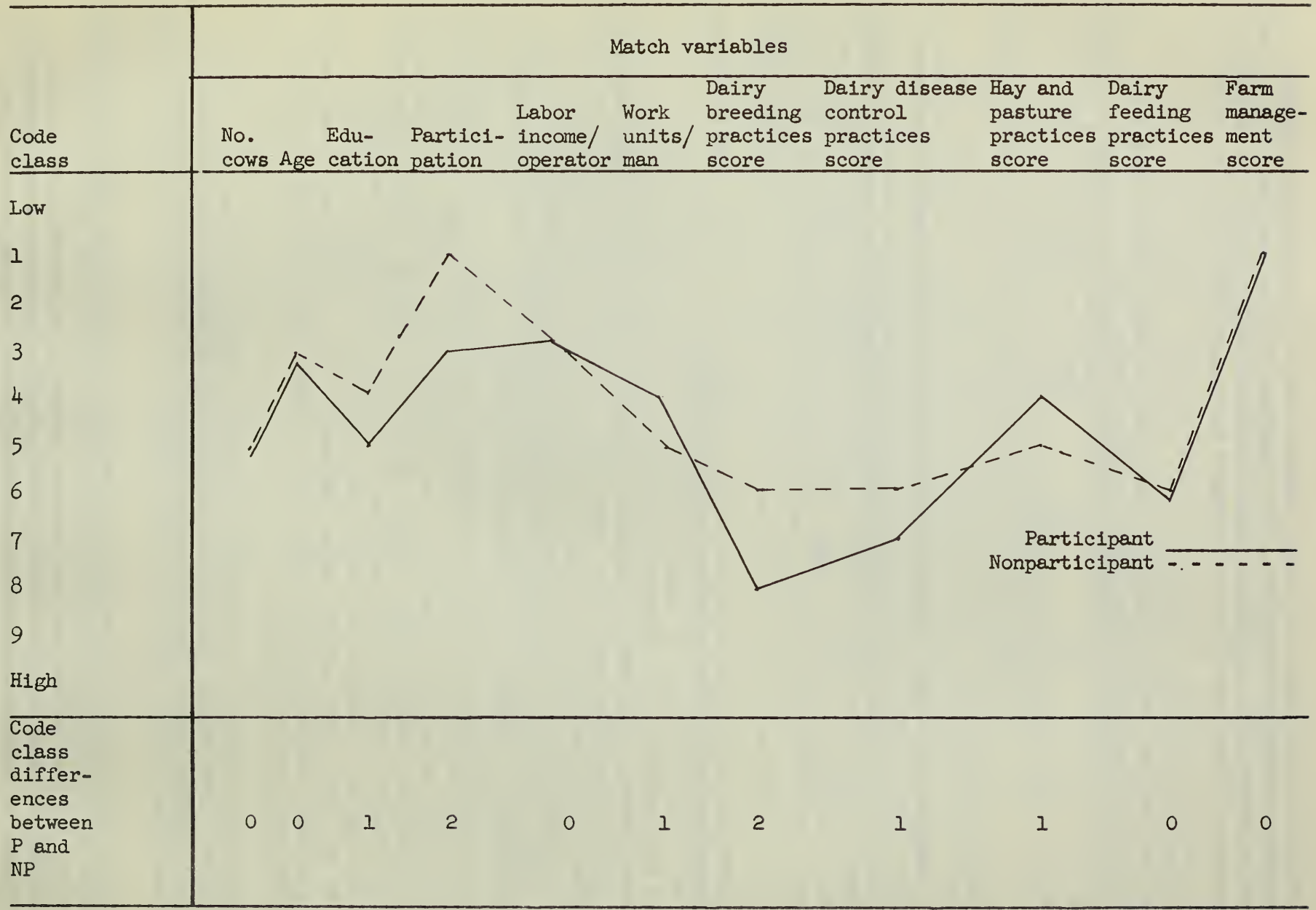

Figure 2. Graphic Illustration of the Variations That Exist Between the 11 Match Variables for One Participant and His Matched Nonparticipant.

An example of the inadequacy of matching on one variable and assuming its correlation with another variable may help to clarify this point. It is generally assumed that most persons with high education will be relatively high participators and that persons with low education will be relatively low participators. To illustrate how inadequately matching on education would have made the match on participation, the 76 operators with from 13 through 18 years of education were selected from the benchmark sample of 250.8/

The participation score of each of these was then tabulated as shown in table 7. 9/

Table 7. Distribution of Social Participation Scores for 76 Operators in the Benchmark Sample With High Education and Percentage Above and Below the Median Social Participation Score of the 250 Participants in the Benchmark Sample.

Type of data	Social participation scores								
	0-30	31-45	46-60	61-75	76-90	91-105	106-120	121 +	Total
Numerical frequency	6	14	13	11	15	8	4	5	76
Division at the median of 250 benchmark participants	43 percent of 76 operators with high education had below median participation scores		APPROXIMATE	MEDIAN a	57 percent of 76 operators with high education had above median participation scores				

a Since the median for the 250 sample participants equals 58, the division between 60 and 61 only approximates the median, but the above percentages would not be distorted more than one or two points by this difference.

8/ The participation scores of the operators with low education were tabulated in the same manner. The percentage of operators with low education who had participation scores above the median for the benchmark sample was nearly identical to the percentage of operators with high education who had participation scores below the benchmark median.

9/ The detailed tabulation by the different levels of high education is:

Education (years)	Social participation scores								
	0-30	31-45	46-60	61-75	76-90	91-105	106-120	121 +	Total
13	2	2	6	2	3	1	3	1	20
14	2	5	5	3	5	3	-	1	24
15	2	2	-	1	3	-	-	-	8
16	-	2	2	5	4	4	1	1	19
17 or 18	-	3	-	-	-	-	-	2	5
Total	6	14	13	11	15	8	4	5	76

Suppose, on the basis of past experience with correlations between education and participation, it was assumed that the participation scores of practically all 76 persons with high education (13 through 18 years) would fall above the median social participation score for the 250 participants in the benchmark survey. Of course, this would make it necessary to assume that the 76 control operators would have a similarly high correlation between education and participation.

Suppose further that, on the basis of this assumption, the 76 operators were matched on education but not on participation. As indicated in table 7, there would have been approximately 43 percent of the 76 operators who would not have had participation scores as high as predicted.

The consistently low correlations between the 11 match variables for the 250 participant operators are shown in table 8. 10/ A similarly low level of correlations was found for the 107 surviving nonparticipants. These correlations are posted in table 8 in the appendix section. On the basis of such correlations, matching on any one variable could not be expected to yield an adequate match on any of the other variables.

The above discussion emphasizes that, when correlations between variables are low, it is necessary to match on many rather than a few variables if an adequate pair match is to be attained.

Matching on many rather than a few variables leads to the following results:

1. Large differences on many variables per matched pair are avoided. This is especially true since the matched pairs were but rarely allowed relatively large differences on more than one or two variables of the total 11 match variables. The evidence presented indicates that matching on only a few of the 11 variables would have resulted in large differences on many of the remaining variables of the original 11.

2. The number of matched pairs attainable when matching on many variables is lower than if matching on a few. Thus, in most studies a decision would have to be made between the relatively high control attained by matching on many variables or the retention of more cases matched on fewer variables without much control.

3. There may have to be more relatively large differences allowed on any two or three variables when matching on many variables than would be true if one were to match on only these two or three variables. Obviously, this presents a problem of judging which will achieve the greatest control. In this study, because of the low correlations between variables, matching on many variables gives the greatest total control.

10/ Product moment correlation formula is:

$$r = \frac{N \Sigma f \ (d'_x) \quad (d'_y) - (\Sigma \ f_x d'_x) \quad (\Sigma \ f_y d'_y)}{\sqrt{\left[N \Sigma f_x (d'_x)^2 - (\Sigma f_x d'_x)^2\right] \left[N \Sigma f_y (d'_y)^2 - (\Sigma f_y d'_y)^2\right]}}$$

Table 8. Product-moment Correlation Coefficients Between the 11 Match Variables for the Total Group of Participant Operators

	No. cows	Work units/ man	Farm manage- ment score	Social partici- pation score	Dairy feeding score	Hay and pasture score	Dairy breeding score	Dairy disease control score	Labor income/ operator	Age	Edu- cation
No. cows	--										
Work units/man	.15[a]	-									
Farm management score	.29	.15[a]	-								
Social partici- pation score	.17[f]	.04[h]	.09[f]	-							
Dairy feeding score	.12	-.06[a]	.09	.19[f]	-						
Hay and pasture score	.14[b]	-.04[d]	.15[b]	.06[g]	.19[b]	-					
Dairy breeding score	-.17	.40[a]	.01	.11[f]	.24	.13[b]	-				
Dairy disease control score	.17	-.04[a]	.06	.10[f]	.14	.12[b]	.14	-			
Labor income, operator	.24	.23[a]	.13	.15[f]	.00	-.02[b]	-.07	.07	-		
Age	.12	-.15[a]	-.10	.10[f]	-.06	-.04[b]	-.10	-.09	.05	-	
Education	.03[c]	.22[i]	.16[c]	.18[b]	.17[c]	.21[e]	.19[c]	-.04[c]	-.03[c]	-.28[c]	-

a for 226 b for 247 c for 248 d for 223 e for 245 f for 249 g for 246 h for 225 i for 224

Summary

Tests of the paired match were made by use of the t test for correlated pairs of means. For eight of the 11 variables the matched pairs were not significantly different (.05 level of significance chosen). However, four of these eight variables, although their differences were not significant, had probability levels of .30 or better. The three remaining variables - social participation, hay and pasture practices score, and education - were significantly different.

There are low intercorrelations between pairs of the 11 variables. These low intercorrelations explain why the matching operation essentially was one of finding a participant and nonparticipant operator with similar patterns of variation on the 11 variables rather than one of finding two operators who were consistently low or high on the 11 variables.

Consideration of the advantages and disadvantages of matching on either many or a few variables resulted in the conclusion that the use of many variables would achieve the highest degree of control in matching.

TEST OF REPRESENTATIVENESS OF THE 87 MATCHED PARTICIPANTS

Introduction

After the 87 participants and 87 nonparticipants were accepted as matched for use in analyzing change, the question remained as to whether the 87 participants could be said to represent the total effects of the program on the sample of 250 participants. The hypothesis to be tested for answering this question may be stated as follows: The 87 matched participants and the remaining 163 participants of the original sample of 250 participants were drawn from the same hypothetical universe. To test this hypothesis the t test was used. If the hypothesis should be rejected, the 87 matched participants could not be considered representative of the original sample of 250 participants.

Test Used

The t test to be used required a test which utilizes N's of different size. Furthermore, because the amount of variance is crucial to determining whether or not the t test indicates a difference is significant, one formula was used if the variances were almost identical and a different one was used if they were significantly different. Therefore, the variances first were tested by the Bartlett test for homogeneity of variances. If the variances were enough alike so that the hypothesis that $\sigma_1^2 = \sigma_2^2$ could be accepted, a common variance was estimated by:

$$s^2 = \frac{(N_1-1)\ s_1^2 + (N_2-1)s_2^2}{N_1 + N_2 - 2}$$

This common variance was then used in the following formula for the t test:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{s^2 \frac{N_1 + N_2}{N_1 N_2}}}$$

with $N_1 + N_2 - 2$ degrees of freedom.

If the variances were enough different so that the hypothesis that $\sigma_1^2 = \sigma_2^2$ could not be accepted, the two variances were utilized in the following formula:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}}$$

with n degrees of freedom where:

$$n = \frac{\left(\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}\right)^2}{\left(\frac{s_1^2}{N_1}\right)^2 \frac{1}{N_1 + 1} + \left(\frac{s_2^2}{N_2}\right)^2 \frac{1}{N_2 + 1}} - 2$$

Results of the t Tests

The two groups of participants differed significantly on six of the 11 variables. The variables on which they differed significantly were education, age, labor income per operator, farm management practices score, hay and pasture practices score, and work units per man. In addition, all but one of the other five variables had differences which probably should not be ignored entirely, especially those for number of cows and dairy breeding practices score. (Table 9.)

The variables on which there are significant differences are important enough to justify rejection of the hypothesis that the two groups of participants could have been drawn from the same universe. Therefore, the 87 match participant operators cannot be said to represent the sample of 250 participants. Because of this, the differences between the 87 matched participants and nonparticipants cannot be inferred to be the differences that might have been found if all 250 participants had been matched. Consequently, the conclusions reached by comparing the 87 matched participants and nonparticipants cannot be said to represent the total effects of the program. But, since the total sample of participants could not be matched, these conclusions are the best estimate of the effectiveness of the program.

Table 9. Significance of Differences Between the 87 Matched Participant Operators and the 163 Remainder of the Original Sample of 250 Participant Operators on 11 Variables.

	Benchmark means[a]		Difference between means	Probability level
	87P	163 P		
Education	11.3	12.4[e]	1.1	.001
Age	43.6	38.6	-5.0	.001
Social participation score	59.0	62.9[b]	3.9	.40
No. of cows	31	33	2	.30
Work units/ man	308.9	335.3[c]	26.4	.02
Farm management practices percent score	62.9	66.9	4.0	.01
Agronomy practices for hay and pasture percent score	54.5	60.9[c]	6.4	.01
Dairy breeding practices percent score	76.5	80.3	3.8	.10
Dairy disease control practices percent score	62.9	66.1	3.2	.20
Dairy feeding practices percent score	61.2	61.3	.1	1.00
Labor income/operator	$1938	$2750	$812	.01

a Labor income/operator and farm business variables are from 1955 labor income data, while personal characteristics and farm practices scores are for the year 1956.

[b]N = 162 [c]N = 139 [d]N = 160 [e]N = 161

However, it is possible to make some estimate of the bias introduced if certain factors can be isolated and measured. This will be attempted in a subsequent report on farm business factors affecting income change. In any event, it is far better to have the increased control attained by use of a pair-matched participant and control group, irrespective of whether the matched participants do or do not represent all participants in the original sample, than to use all participants and compare them to a control group with which they would be poorly matched.

OBSERVATIONS AND IMPLICATIONS RELATING TO METHODOLOGY FOR EVALUATIVE STUDIES OF EDUCATIONAL PROGRAMS

This report has been concerned with describing the methodology used in the Evaluation Study of the Farm and Home Management Program in New York State and in presenting the rationale thereof. There are, however, certain observations and implications relating to methodology arising out of the experience with the study which deserve attention. These observations and implications should prove helpful

in planning other evaluative studies. In the following sections some of these observations and implications are outlined.

I. The Evaluation Study of the Farm and Home Management Program in New York State was only partially experimental.

A. Experimental characteristics of the study:
1. Before and after treatment measures were taken for the participants.
2. There was a matched control group, with benchmark and terminal measures.
3. The major foci of the Farm Management Program - keeping records, analyzing records for strengths and weaknesses, and planning future behavior from the results of the analysis - were maintained.

B. Nonexperimental characteristics of the study:
1. Treatment of the experimental group was not uniform. It was never intended that this would be controlled. The major variances were:
a. Different inputs of agent time per county and per participant within counties.
b. Differences in scope of program subject matter from county to county according to interests and major speciality of the agents involved.
c. Some differences in the quantity and quality of records used for analysis of strengths and weaknesses.
d. Differences in methods used - Some counties relied primarily on countywide meetings; one county used small neighbor groups, and others somewhat larger groups drawn from four or more sectors of the county; all counties used farm visits, but the average number and length of these varied from county to county.
e. Differences in intensity of teaching subject matter - This was due to differences in time input per participant but also to differences in "lesson plans" from one county to another.
2. Absolute restraints were not imposed to keep control group operators from becoming participants. This resulted in additional attrition from the control group, because the nonparticipants who became participants were removed from the control group.

II. The time span covered by the study presents problems which have implications for future studies.

A. Attrition from the participant and nonparticipant groups must be expected and allowed for in size of sample taken.

B. When paired matching is planned, one of the two groups sampled must usually be at least twice the size of the other in order to be able to find an adequate match for all those in the smaller group. Whether the control group or experimental group should be the larger may vary according to the type of program and the characteristics of those who are the participants. For example, we might expect different attrition and problems in studying low income farmers than we might in studying commercial high income farmers.

C. Study of an action program has many problems. Among them are the following:

1. Will the operational program, as originally planned and upon which the evaluation study was designed, remain constant? The Evaluation Study and the Farm and Home Management Program in New York State were conducted under fairly favorable conditions in that the farm management phase of the program was carried through as originally planned, with focus upon the use of farm records for analysis of the farm business as basis for future plans and actions to improve the business.
2. It is not a simple matter to keep process records of methods used and subject matter taught in a program over a period of years. These difficulties may be emphasized by an example. In New York State, agents were urged to keep records of their contacts with their participants. Only two agents, out of all the agents in the ten study counties, ever kept such records for any significant length of time.
3. The turnover and lack of program staff could become disruptive factors. In New York State, these two factors were not significant problems for the agricultural program but were two of the factors which prohibited the home management phase of the program from ever becoming a vital force in New York State.
4. The turnover and absence of members of the research evaluation staff are also problems that will often be encountered in a longitudinal study. This turnover leads to a loss of knowledge about the action program as well as important details of the research project, since much of this kind of knowledge is never written down and may not be transmitted verbally from initial research personnel to their successors. This unwritten knowledge can, at points, be crucial to correct analysis of data and to accurate interpretation of results.

III. Expectations of administrators, supervisors, and other staff may be quite different from the results which the research can produce.

Often there is a great difference in what program directors, supervisors, and other staff members expect will be measured in an evaluation study and what actually will be measured. To obtain some informal verification of this, an administrator, a State leader of agents, and an agricultural economics specialist who were close to formulation of policy for the program were asked what questions they expected would be answered by the evaluation of the program.

In the long list of questions these persons submitted, there were only three that the evaluation staff could say were being answered adequately and directly. However, there are a good many of the questions to which the evaluation staff can give some judgmental answers. Such answers are based on a combination of data, observations of program performance, discussions with program personnel, and study of case records.

A. Questions being somewhat adequately answered by objective data:
   1. What were the changes in practices, knowledge, understanding, and incomes of the participants compared to the same kinds of changes in the control group?
   2. What is the cost of the management program per family?
   3. What is the cost of the management program vs that of the regular program?

B. Questions for which primarily judgmental answers can be given:
1. Can you teach families management as you can teach approved practices?
2. What were the various program methods used, with some subjective evaluation of their effectiveness?
3. How effective were the different methods of conducting farm and home management programs?
4. What suggestions for improvements in techniques of teaching management can be made?
5. How effective was the program in helping the families to recognize the collective needs and interests of all members of the family?
6. How effective was the program in helping the families to plan for achieving goals related to the needs and interests of members of the family?
7. How effective was the program in helping to implement the plans for achieving goals of family members?
8. How effective was the program in helping the families recognize the advantages of the "family-centered" approach to other areas of family living, such as social participation and plans for education?
9. Was the money spent warranted by the number of families involved and the progress they made?
10. Are the families enrolled in the Farm and Home Management Program the ones who customarily take advantage of such educational programs?
11. What changes have occurred in the attitude of the New York State Extension staff toward family-centered programs vs departmentalized programs?
12. How can the extension staff involve all family members in a coordinated approach involving the points of view of the departments of agriculture, home economics, and 4-H?
13. Can extension agents develop and carry out such a coordinated program?
14. Assuming some of the agents can develop and carry out coordinated programs, what specialized kinds of training should all agents have to prepare them for doing this type of extension work?
15. Is farm and home management more effective per time input when it is assigned to one agent who has this as his sole responsibility, or when the responsibility is divided among agents, or when only a partial agent is responsible for the program?
16. What are the obstacles involved for a departmentalized staff, as exists in New York, in developing and maintaining a coordinated program?

C. Question for which no answer can be given:
1. What is the need for additional extension personnel on the State and county level.

APPENDIX

Supplementary Tables

Table 1. D-Index and Percent Passed for Each Item in the Farm Management Knowledge and Practices Test.

	D-Index value	Percent passed
Farm management knowledge		
Operator's evaluation of size of operation (no. of cows)	25	62
Operator's evaluation of production per cow	24	69
Operator's evaluation of production per acre	21	56
Operator's evaluation of efficient use of machinery	42	58
Operator's evaluation of efficient use of labor	57	53
Operator's evaluation of efficient use of capital	46	53
Operator's evaluation of efficient use of feed	25	61
Least important farm record	37	51
Goal for purchased dairy feed (as percent of milk receipts)	28	75
Three-year goal on no. of cows per man in relation to labor efficiency	4	65
Three-year goal on no. of pounds of milk sold per man in relation to labor efficiency	38	61
Use of increase in inventory in figuring labor income	29	62
Proportion of total current market value of business represented by real estate	8	91
Proportion of all farm cash income represented by sales of milk	26	82
Who best off in comparing labor income of farmer with wage of factory worker and wage of hird man on farm	19	83
Problem to solve on farm business situation - what most serious weakness	21	73
Farm management practices		
Actual size of operation (no. of cows)	36	54
Actual production per cow	19	43
Actual production per acre	29	54
Actual efficient use of machinery	41	58
Actual efficient use of labor	58	51
Actual efficient use of capital	55	60
Actual efficient use of feed	20	59
Farm records used in farm business	10	90
Most important use of records kept	15	25

r_{tt} = .38 r_{nn} = .38

Table 2. D-Index and Percent Passed for Each Item in the Dairy Feeding Practices Test.

	D-Index value	Percent passed
Forage harvesting practices relating to quality of forage	40	64
Hay equivalent fed	17	67
Pasture management	36	75
Clipping of pastures	22	16
Supplemental roughage feeding of cows on pasture	31	82
Supplemental pasture for cows when other pastures are short	0	88
Minerals cows receive in addition to those in grain mixture	8	94
Grain feeding for milking cows	9	94
Feeding calves	35	58
Grain feeding of heifers less than one year of age when not on pasture	4	97
Grain feeding of heifers less than one year of age when on pasture	49	80
Grain feeding of heifers over one year of age when not on pasture	20	85
Grain feeding of heifers over one year of age when on pasture	21	10
Supplemental roughage for heifers less than one year of age when not on pasture	8	96
Supplemental roughage for heifers less than one year of age when on pasture	56	74
Supplemental roughage for heifers over one year of age when not on pasture	4	95
Supplemental roughage for heifers over one year of age when on pasture	29	23
Age when fall heifers are allowed to go on pasture completely	31	77
Age when spring heifers are allowed to go on pasture completely	21	90
Average tape weight of your heifers at breeding	34	66
Average tape weight of heifers at first freshening	53	34
Average age of your heifers at breeding	49	34
Average age of your heifers at first freshening	50	33

r_{tt} = .49 r_{nn} = .51

Table 3. D-Index and Percent Passed for Each Item in the Dairy Breeding Practices Test

	D-Index value	Percent passed
Proportion of cows bred artificially, to pedigree sires, and to registered sires	61	60
Percentage of cows bred last year which required only one service	50	66
Breeding and treatment records kept	50	83
Average calving interval	10	96
Cows turned out daily during winter for exercise	61	79
Cows turned out daily during winter to check for heat	64	80
Length of time cows usually remain dry	21	91
Length of time allowed between calving and first service following calving	30	79

r_{tt} = .40 r_{nn} = .68

Table 4. D-Index and Percent Passed for Each Item in the Dairy Disease Control Practices Test

	D-Index value	Percent passed
Proportion of herd treated during the year for mastitis	23	61
Size of stalls adequate for prevention of mastitis	60	51
Ample bedding used for prevention of mastitis	17	94
Strip cup used daily	75	37
Teat ends dipped in disinfectant after milking	50	16
Length of time milking machine is on most cows	35	89

r_{tt} = .17 r_{nn} = .46

Table 5. D-Index and Percent Passed for Each Item Tested in the Agronomy Practices for Corn Test

	D-Index value	Percent passed
Average pounds nutrient/acre of N	30	63
Average pounds nutrient/acre of P_2O_5	30	89
Average pounds nutrient/acre of K_2O	19	95
Percentage of acreage seeded with hybrids with high, moderate, and low comparative yield ratings	83	68
Percentage of corn acreage treated for weed control	97	39

r_{tt} = .19 r_{nn} = .54

Table 6. D-Index and Percent Passed for Each Item Tested in the Agronomy Practices for Oats Test.

	D-Index value	Percent passed
Average pounds nutrient/acre of N	55	77
Average pounds nutrient/acre of P_2O_5	45	81
Average pounds nutrient/acre of K_2O	51	78
Percentage of total acreage seeded to highly, moderately, moderately, and not recommended varieties of oats	96	54
Percentage of oat acreage treated for weed control	29	28

r_{tt} = .31 r_{nn} = .69

Table 7. D-Index and Percent Passed for Each Item Tested in the Agronomy Practices for Hay and Pasture Test.

	D-Index value	Percent passed
Proportion of acres seeded with a recommended variety of legumes (alfalfa, birdsfood trefoil, red clover)	90	35
New seedings	29	76
Average pounds of nutrient/acre of N	5	3
Average pounds of nutrient/acre of P_2O_5	28	16
Average pounds of nutrient/acre of K_2O	31	18
Average number of years a particular mixture of legumes is left down (alfalfa alone, alfalfa and birdsfoot trefoil, red clover or other legumes, birdsfoot alone)	73	52
Percentage of acres of seeding as recommended for type of soil drainage	87	55

r_{tt} = .41 r_{nn} = .71

Table 8. Product-moment Correlation Coefficients Between the 11 Match Variables for 107 Nonparticipant Operators.[a]

	No. cows	Work units/ man	Farm manage- ment score	Social partici- pation score	Dairy feeding score	Hay and pasture score	Dairy breeding score	Dairy disease control score	Labor income/ operator	Age	Educa- tion
No. cows	-										
Work units/man	.31	-									
Farm management score	.18	.19	-								
Social partici- pation score	.13	.01	.02	-							
Dairy feeding score	-.03	-.10	.06	.14	-						
Hay and pasture score	-.01[b]	-.11[b]	-.14[b]	.04[b]	.29[b]	-					
Dairy breeding score	-.13	-.11	.01	.02	-.16	.14[b]	-				
Dairy disease control score	.02	.06	-.15	.10	.13	.04[b]	.04	-			
Labor income/ operator	.12	.31	.36	.08	.12	-.04[b]	.23	.15	-		
Age	-.01	-.20	-.11	.04	-.18	-.06[b]	-.13	-.09	-.27	-	
Education	.12	.01	.20	.17	-.01	.14[b]	.18	.10	.31	-.41	-

a The 107 operators were those available for matching in 1959. They are the residue from the 150 operators in the 1956 sample after attrition in the years from 1956 through 1959.

b for 106.

PART B.

Implications for Extension Evaluation Research

IMPLICATIONS OF EVALUATION STUDIES OF FARM AND HOME DEVELOPMENT FOR PLANNING AND DESIGNING EVALUATION RESEARCH: SUMMARY OF DISCUSSION GROUPS

Fred P. Frutchey, Robert S. Dotson, and Bert L. Ellenbogen[1/]

PROBLEM AREAS

The report of the three studies on farm and home development illustrates that practical life situations are more variable and less controllable than laboratory situations. This presents problems in the conduct of experimental-control group studies in extension education. Four such problem areas emerged in the farm and home development studies under consideration.

1. Controllability - The problem of keeping the experimental and control groups "pure."
2. Planning - Sufficient time for planning before action is initiated.
3. Program and Objectives - Clear understanding of farm and home development, its objectives, how to do it, and how to evaluate it.
4. Organization - Personnel selection, training, and relationships.

The three seminar groups discussed the following ten topics in reaching implications of these studies for planning and designing evaluation research.

Topic 1. What were the study teams attempting to measure? How did some of them try to keep up with this "what?"

The studies were designed to measure behavioral changes or products (e.g., farm plan) of behavioral changes. Although objectives to be measured were verbalized, they were not concrete enough to be operationalized for teaching nor for evaluation. For example, how can you tell when a person is improving in his skill with the decision making process? Definitions of the objectives changed as the study progressed.

At the initiation of the study, the concept of farm and home development was not clear. There was not close agreement on whether it was a method or a program. How was it related to other extension work, to rural development, to program projection? How did it differ from or was it similar to each of these? Should one use an intensive or extensive approach, or both, in doing farm and home development work?

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Should research be done on a program that is so nebulous? Should it be done if teachers can't define clearly the changes in behavior expected as a result of their efforts? How can you measure the results if you don't know what they are expected to be?

Implications

If intangibles of teaching have any meaning, it is in terms of what people do or what is reflected in the products of their behavior. Intangibles of the past are realities of today. It takes some thinking to clarify objectives in terms of behavior. When unanimous agreement cannot be reached, it must at least be reached for the purpose of the study.

Planning and preparation to clarify the part of extension work under study is essential for the teaching and evaluation processes, and to understand its role in extension work. It is necessary for research to know what it is dealing with.

The more nebulous the program at the start, the more planning and clarification is necessary. The research people and the program people working together can do this if action is not immediately necessary. With the lack of such planning, the program can muddle through, but research is stuck in the mud.

See also topic 8.

Topic 2. What problems did the time span of the studies present?

Attrition through loss of both control and experimental families by moving, discontinuing in the program, leaving farming, etc., took place. Some control families became participators in the program. These things can't be controlled for completely, but they can be allowed for.

Contamination of control families with the experimental factor took place in some instances.

The long time span of the study also permitted change in personnel in both research and Extension. Changes in the concept of farm and home development also occurred.

Implications

Although the time span presented problems, these should not be deterrents to such studies. They provide experience for improving research techniques. The 1961 automobile could not have been made in 1921.

More careful planning before the initiation of the project will help to reduce the problems of time span. If the research people are brought in on the development of the project, both research and program people can build a better research design.

An initial pilot project to try out and true up the evaluation work on a complex program like farm and home development will help to keep the later experimental project more completely controlled.

Allow for attrition in the sample by selecting a larger number than eventually will be needed for comparison in each of the two groups.

Contamination in some studies can be prevented to some extent by creating a "no-man's land" between the families in the control and experimental groups as, for example, between two counties with an intervening county. Families in such counties may have very little contact or communication with each other. But, even so, there may be infiltration from other sources.

Try to keep continuity of personnel. Don't select study areas where personnel are likely to leave before the end of the study. If they do leave, select high quality replacements so that continuity of the plans for the project will be impaired as little as possible.

Topic 3. What problems arose in terms of the date on which the studies were initiated?

In some instances the study began with only a few families in the project. More came in from time to time. Benchmark data had to be collected when the families began participating. This created some practical problems including costs of getting the benchmark data. In at least one instance, in order to initiate the study, participants who had been exposed for some time had to be involved. This resulted in inadequate measurement of change.

Implications

Sufficient planning may alleviate some of these problems, such as starting the teaching and the study only after a certain large enough number have decided to participate. Create sufficient awareness of the program so that in a reasonably short time there will be enough participants. Allow any newcomers to enter for the teaching, but do not include them in the study.

Topic 4. Were the studies "experimental" or not?

What does the word "experimental" mean?

It was generally felt that too many factors were left uncontrolled in the studies through force of circumstances. Greater attempt - through establishing administrative understanding and agreement - was made in the Iowa study to exert controls.

Families in the experimental group wanted to learn about farm and home development. Did that make them different from the families in the control group? Did that bias the results?

To what extent were all other influential factors controlled and accounted for? Very little seems to have been done to determine the most influential factors. Many available factors which were thought to be influential were used. Because of their intercorrelations, perhaps 3 or 4 control factors would provide as accurate control as 15 or 20. Keeping the experimental factor or treatment constant and continuous is an important consideration, but it was not always possible to do so because the concept of farm and home development changed as the project progressed.

Implications

If experimental research is desired, provision should be made to retain personnel and permit their control of the experiment, with allowance for minimum deviation without wrecking the program itself. In behavioral research there must be a balanced adjustment between strict adherence to research principles and the teaching so that the "patient lives." The term "experimental" is relative according to the degree of control possible. Perfect control in any field of study is probably impossible. "Identical" twins are probably not identical, but their differences may not be great enough to affect the results of a study.

Topic 5. What were the problems of sampling and matching for control purposes?

Problems encountered were: Lack of a clear definition of the population studied; those who participated did so by choice; experimental group was higher on control factors than control group, resulting in too few cases of matched pairs; doubtful representativeness of the two groups.

Increasing the number of control factors, and maintaining the accuracy with which the pairs are matched, decreases the number of matched pairs. Increasing the number of control factors, and maintaining the number of matched pairs, decreases the accuracy of matching. For example, one may get 100 pairs matched exactly on one factor. But when a second or third factor is also introduced for matching, the exactness of the matching on the first factor may have to be reduced in order to maintain 100 pairs.

Implications

Make a clearer definition of the population, as was done in some cases. It is almost inevitable that, in studies like these, participation is by choice. To obtain more matched pairs, the control group could be much larger. All cases in both groups could be used in developing a regression equation for equating the groups. The most influential control factors could be tested. Intercorrelations usually show that the control factors can be reduced to a small number if they are fairly highly correlated with the experimental factor.

Topic 6. What were the problems of constructing questionnaires to measure the effects of the program?

Questions were raised about the validity of the tests of behavioral changes, due to lack of clarity of objectives. Time generally was inadequate and hurried preparation frequently resulted. Objectives changed during the period of the study. If research doesn't have the tools of evaluation for objectives, should the research be done?

Implications

More care should be taken in the development of individual items and tests themselves (questionnaires) in order to more precisely measure the effects of the program. Behavioral areas of "skill" and "decision making" were seen to be lacking or inadequate, as far as measurement devices were concerned, so consideration should be given to doing relatively more basic research in the development of such devices in preparation for future studies. Action people need to know in operational terms the behavior they are expected to teach.

Topic 7. How was staff organized to do the studies?

Roles, responsibilities and relationships were not always clearly recognized and understood. Authority to do what was necessary to carry out rigorous research did not always reside in the research people.

Also see topic 2.

Implications

An advisory committee with responsibility for the study has proven advantageous in many studies, with a person from the subject matter department as chairman and the research person as consultant. This separates the administrative role of chairman from the consultant role, thereby making it easier to carry out both roles efficiently. Composition of the committee will probably depend upon the State situation but will probably include representation from groups interested in the study. The chairman is expected to keep the study moving; the research consultant is expected to plan and conduct the study in a research-worthy manner.

Topic 8. What were the expectations of administrators and others regarding the studies?

It appeared that administrators expected such research to:

1. Get the educational effects quantified so they could use such information when making decisions concerning the allocation of resources.
2. Help them justify to legislators the need for appropriations.
3. Serve as a basis for improving the farm and home development approach.
4. Give them quick, practical results.

Some of these expectations were in conflict with others. Clearly stated, well defined administrative objectives were, in the main, lacking at the design stage.

Implications

Administrators should be made more aware that immediate results may not be forthcoming because of the nature of research. However, the needs of the administrators can be met in other ways if provided for in research plans. If these needs are known ahead of time, plans can be made to collect supplemental information and to "take readings" now and then as needed.

All concerned should realize the problem of constructing sensitive measuring instruments, as stated in topic 6.

Topic 9. What was done about feedback from interim reports?

Does feedback affect the program, for good or bad? Some discussants considered it not good in experimental studies. In Iowa, feedback was kept to a minimum, because it might have destroyed the control aspects of the research design. Others thought feedback helped to improve and standardize the treatment.

Implications

In either case, interpretations of study results would need to be made in terms of whether feedback from interim reports was permitted.

Topic 10. Do the studies permit the preparation of a comparative study which would include findings from all three?

The discussion here was brief, but largely in the affirmative. Such summary would be complicated by the fact that there had been no strong strings attached to the money in terms of design and methods to be used.

Implications

Some level of generalization is possible and a summary should be done. Numerical data from each study may not permit adding, but the interpretations from each set of data can be combined and even integrated.

Consider including a core of common data in future studies and have each State add other data peculiar to that State. Consider the possibilities of the method being essentially the same in all States.

CONCLUSIONS

In conclusion, it was clear to the discussion groups that the staffs responsible for the research were keenly aware of the problems they faced and did the best possible under the circumstances. They made an important contribution to extension research methodology for the future by bringing to the surface problems to be faced in such research. They made such a study a reality. Their objectivity in discussing their own research is commendable.

There was divergence of opinion as to whether or not such studies should be experimental - the majority favoring experimentalism. There was agreement that such research is necessary and practicable, and that stronger direction of efforts at the national and State levels (especially as far as design and methodology are concerned) might provide the kind of continuity and integration now sought for and commendably approached.

It must be recognized that research in the field of human behavior cannot be so well controlled (today) as in the field of physical phenomena. Control in research is relative. In some fields it is easier than in other fields.

Errors in measurement may be large today - too large for our own satisfaction - but the critical question is "Are they small enough for useful decisions, judgments, or conclusions?"

New and more valid and reliable techniques will emerge. Progress can, has, and will be made in the future - if we keep at it.

Section II.

RELATIONSHIP OF EXTENSION RESEARCH TO EXTENSION TRAINING AND GRADUATE TEACHING

Part A.

Application of Extension Research Findings to Inservice Personnel Training

LET'S TAKE EXTENSION RESEARCH OFF THE SHELF

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Implicit in this title are four basic assumptions: (1) There is unused knowledge, (2) there is a shelf, (3) knowledge is on the shelf, and (4) there is a need and a place to apply the knowledge.

All four of these assumptions are true. Three of them are obvious. Some people may question that there is a "shelf." However, there are three common shelves on which research is stored and from which it is sometimes released with difficulty.

The first is in the mind of the research worker himself. For some reason or other, he either refuses or neglects to publish, and isn't concerned with transmitting the results of his research to others who can use it. By the same token, he isn't too interested in putting his own research findings to use. He simply pursues knowledge for knowledge's sake.

The second common "research shelf" consists of research which is published in such a form that it is useful primarily for impressing other research scientists. It never gets translated into action.

The third common "research shelf" - and perhaps this is the most common one of all - is research which has been published but simply is not used by those of us who should use it. Much research is published in useable form, but simply because "I didn't do it myself," we are not particularly impressed. Consequently, we neglect to make effective and easy use of information readily at hand, largely because it was done by someone else.

We who work in Extension must recognize that this is the age of science. The modern frontier in America is no longer geographic - it's scientific. It's a vertical frontier instead of a horizontal frontier. It's a frontier limited only by the mind and the imagination of man.

It is on this frontier that our modern farmers operate. They rush to adopt new techniques and new patterns of living. Modern farmers and agricultural industries are quick to adopt the new - perhaps quicker, in many cases, than some of us in the agricultural extension system.

There is considerable evidence that some of the greatest resistance to change in our society occurs among educators themselves. In many of our colleges we still have padded curricula, small classes, a teacher-pupil ratio no different from what it was 50 years ago, and resistance to techniques which would readily increase the efficiency of teaching. The teacher-pupil ratio is perhaps even lower than it was a couple of decades ago.

By the same token, there is much in our agricultural extension teaching methods and techniques that likewise indicate resistance to change. Some of us find it convenient (maybe it's difficult) not to keep abreast of rapid marches in agricultural technology. We complain sometimes that commercial agencies are really doing extension work as part of their sales program, but don't recognize that this situation may be developing because Extension itself is not fully meeting the need.

The most difficult research of all is that which we do on ourselves. Yet it is essential. We should very frequently ask ourselves not whether the environment roundabout us is changing, but "Am I changing so that I can make the maximum contribution to the changing environment roundabout me?" It is to answer this question that we engage in research on agricultural extension methodology.

There is available a considerable storehouse of information on teaching methods which we can use to advantage in our extension program. Much of this is outside the extension organization, but much of it lies within. Extension research, as a separately defined activity, is relatively new. Therefore, while we push ahead in this field, we must draw on competent research wherever we find it.

It is always difficult to bridge the gap between research and application. However, one of the time-honored functions of the Extension Service is to translate agricultural research into action on the farms of America. Yet many extension specialists are skeptical of research, feeling that it is theoretical, sophisticated, and impractical.

Many extension specialists harbor the same skepticism toward research in extension methods that is done by other extension research specialists. It has been said, "That which we do not understand, we condemn."

We need more frequently to combine extension research with its application. We should have extension specialists join in the research wherever possible. We must constantly motivate the worker to improve his effectiveness and his efficiency. Often this can best be done by having him join in the research itself.

Effective extension work is the most difficult kind of teaching. Yet extension work is viewed by some as requiring no special competence or training. Some people feel the main qualification of an extension specialist is his ability to get along with people. Yet extension teaching is the most difficult of all. There is no captive audience. There is intense competition for "student" time and attention.

The explosion of scientific knowledge we are experiencing makes it difficult for the specialist to keep abreast of new developments. The social and economic adjustments occurring in modern society for both individuals and communities further complicate the extension job.

This is the age of brainpower. Brawn has been displaced by brains as the central ingredient of success in modern agriculture and rural communities. An educated and flexible mind is the central ingredient for modern success.

All these things make it doubly essential that extension researchers and extension supervisors motivate extension workers to want to use extension research. We can motivate our extension workers to improve their own techniques by convincing them that they are dealing with the real growth factor in the American equation.

Education is the variable term in the American equation. It is the factor that is expandable. It is the place where we can induce the most rapid change for the better in our American society.

Brainpower is the thing we deal with in Extension. Constantly we are pushing back the frontiers of knowledge and piercing the curtains of darkness. The goals of our efforts are human betterment and human happiness. In the great land-grant movement there is no "cult of scientists." We do not pursue knowledge merely for knowledge's sake. The end of science is human happiness.

The Agricultural Extension Service has accomplished near miracles as a vital factor in the growth of America. It is challenged today to make the necessary adaptations to the changing environment in which it must operate, so that it may continue to be a central driving force in the still greater America ahead.

One of the best ways to do this is to get extension research off the shelf and put it to work.

USE MADE OF EXTENSION RESEARCH REPORTS

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INTRODUCTION

Until quite late last fall, I had been giving only casual attention to talk of this seminar. I attended frequent staff meetings at which we were filled in on latest developments in planning and implementation. I had been made to understand that I would probably be permitted to attend, since most of the research people in the Division would be expected to be there, but that would be the extent of my involvement. I had even contributed a few feeble suggestions to our representative on the planning committee.

However, late last fall I began to hear rumors that I would be expected to make some sort of survey of how extension research findings are used. I tried to ignore them but eventually learned they were true. I was given a rough idea of what was wanted and instructed to get going.

After the usual amount of procrastination, I came up with a wordy letter of some two pages asking for five major items of information along the lines of what I thought my assignment to be, plus a couple of "sneak-ins" of my own. There was no form to fill out, just a rough outline of the points to mention in the return letter. What I expected to do with the replies, it is hard to imagine!

As practically everyone of our staff with whom I might have checked was on travel status or leave, it was after the holidays before anyone looked at it. Eventually it was brought to the attention of the seminar committee. After their "this is fine, but" comments they suggested the form some of you, who were among our list of very purposively selected respondents, have seen.

The letter was shortened appreciably and made considerably more positive in tone. A form was designed to limit verbosity of replies and to structure them sufficiently to assure (1) proper identification of the source, (2) a listing of the significant findings believed to be useful, and (3) an account of how the findings were used to advantage in extension educational work. To help recall and to focus at least portions of the replies into a compact enough framework to permit tabular presentations, respondents were asked to use Extension Service Circular 521 as a check list.

This brought out one of several obvious misunderstandings. Since this was also referred to as the 1958 edition of the Review, some thought we really meant Extension Service Circular 518, published in July 1958. Others were prompt to call our attention to the fact that ESC 521 was the 1959 edition, since it was issued in July 1959. Apparently, the practice of equating the edition year with the period covered, rather than with the issue date, is not universal. These positions are reasonably defensible. However, I found it considerably more difficult to understand why a couple chose to use the 1954-1958 "Bibliography on Extension Research" as their check list.

METHODOLOGY

While the letter and form were being duplicated, I got to thinking about who likely respondents might be. I was more or less committed to a mail survey, but was counting on the "captive audience" characteristics of most of the potential sample to give me a fairly respectable rate of return.

Any thought of a random sample had to be abandoned because of the nature of our mailing lists. Although we make suggestions as to what categories of extension personnel we would like to have receive our research materials, most of the distribution is handled by the various State publications distribution officers. About the only specific individuals we can be sure are receiving our materials are the Extension Directors, the formally assigned State studies and training persons, and those on our separate list of individuals who can use the publications but are not likely to receive them from the publications distribution officers.

Because of these inhibiting factors, I committed a few violations of approved research methodology and came up with a sample of (1) the research or studies persons in the various States - gleaned from our research newsletter mailing list; (2) what appeared to be the senior training person from each State - selected from the list Miss Collings has for her training newsletter; (3) a few persons recommended as very interested in or concerned with extension research - assembled via doorway inquiries of professional colleagues in the Division; and (4) when no other name was forthcoming from a particular State, the Director of Extension.

The reason for not including the Directors routinely was not a deliberate attempt to bypass them. Rather, it was because of the strong probability that their administrative responsibilities would keep them from first-hand awareness of the contents of current research reports, and they would have to pass the requests along to others. However, some of the most comprehensive statements we received were returned by Directors.

By these devious means, I assembled the list of 174 likely prospects, including at least one and not more than ten persons from Puerto Rico and each of the 50 States. We sent the letter and form to each of them and asked for a return by March 1, 1961. This was crowding things a little, but most of the replies were in by then. Except for a reminder here and there in the course of other contacts with some of the sample, there was no followup.

Because of the nature of some of the replies, I am a little confused about the response rate. There was some evidence in accompanying letters and in comments I have heard since arriving here that, on some occasions, forms were piled up and taken care of by one person. There may have been more of this than we are aware of. At any rate, I estimate we received something like 76 replies from 39 States, in which up to 22 specific studies are mentioned.

Even though most of our sample are research-minded persons, there was an obvious reluctance on the part of many to fill out the forms, particularly on the part of those from States where there is a heavy extension research program. Some returned one of the forms with a summary remark on it; some included a few examples on forms and sent along an explanatory cover letter; and some confined their replies to letters of varying length and enlightenment. Some reported in terms of Extension Service Circular 521, some in terms of the most recent extension research from their States, and some a little of both.

After looking over the replies as they came in, it seemed best to ignore the respondents and comment on the replies according to three classifications: (1) Those dealing with studies mentioned in ESC 521, (2) those dealing with other specific studies, and (3) those sifted from summary statements in letters.

STUDIES MENTIONED IN ESC 521

Preliminary to making observations about studies mentioned in ESC 521, I should explain the rationale for suggesting this circular as a check list. It was presumed that these studies and their findings would have been known for at least a year and there would have been almost that much more time to note the effects of any educational use that might have been made of them, including new reporting or evaluative devices. You may recall we asked for samples, if available.

One of my first exploratory acts was to make a tally by States for each study mentioned in the circular. I found that from one to seven respondents, or someone from one to six States mentioned 54 of the 75 studies.

Table 1. Major Categories of Studies Mentioned in ESC 521 - Number Listed, Number Reported as Used, and Frequency of Mention.[a]

Major category	Studies in Review	Studies mentioned	Times mentioned
Administrative organization and management	12	12	40
Training extension workers	3	2	7
Organization of people to participate in Extension	15	7	15
Local leadership	2	1	1
Program content and planning procedures	10	7	24
General effectiveness and progress of extension work	15	13	28
Extension teaching methods - their use and effectiveness	9	5	7
Research programs and methods	3	2	3
Bibliographies of extension studies	6	5	9
Total	75	54	134

[a] Mentioned by 1 to 7 respondents or someone from 1 to 6 States.

You may be familiar with the major sections of the outline we use in the Reviews and Bibliographies. In table 1, we have the number of studies mentioned in each category, together with the number that were mentioned as having been used by one or more of the respondents. You will note all the studies under "Administrative Organization and Management" were used and 13 of the 15 under "General Effectiveness and Progress of Extension Work" were used.

Value judgments play a very prominent part in construction of table 2. This is a problem that occurs invariably when essay type answers are solicited. However, the following groupings seemed to me to be indicative of what the respondents had to say about specific use made of the study findings.

Table 2. How Extension Research Reports Have Been Used - By Those Who Cite Studies Listed in ESC 521.

Category of use	Frequency of mention
Resource, reference (including background for graduate study or research)	30
Teaching extension, education classes	27
Background for	
General	12
Program planning, designing	8
Building evaluation, research instruments	7
Workshops	3
Writing	3
Seminar reports, other classroom use as student	2
Training sessions, seminars (topics for)	
Agents	10
supervisors	8
Specialist, agent groups (county, State)	5
Extension councils	1
Administrative decisions	10
Research methodology (own research)	8
Copy of findings sent	4
Evaluation	4
Professional presentations (talk, paper, newsletter)	2
Review of literature	1

Background or some reference to study aids appeared in many of the answers, that ranged in length from single words to brief essays. By splitting hairs, often not too objectively, I was able to spread them out a little.

The resource or reference category bulks so large because some respondents, whose names identify them as being among those who recently have completed some phase of graduate study, report the studies they used in their own student research efforts. Since most of the respondents are at the State level, and generally are officed on the campus of a Land-Grant institution where they are quite likely to have at least part-time teaching responsibilities, the size of the teaching and training categories is logical. The small number in the evaluation category is understandable if we presume these refer to substantial formal evaluative efforts, and that evaluation is implied in many if not all of the other categories.

OTHER STUDIES

Although the larger portion of replies related to specific studies dealt with those mentioned in ESC 521, quite a number of studies mentioned in ESC 532 - the most recent edition of the Review - were cited. Twenty-three of the 110 studies listed in ESC 532 were mentioned by one or more of our respondents. They fall under the major categories of the outline as listed in table 3.

Table 3. Major Categories of Studies Mentioned in ESC 532 - Number Listed and Number Reported as Used.[a]

Major category	Studies in Review	Studies mentioned
Administrative organization and management	11	3
Training extension workers	6	1
Organization of people to participate in Extension	12	10
Local leadership	8	0
Program content and planning procedures	24	4
General effectiveness and progress of extension work	27	4
Extension teaching methods - their use and effectiveness	10	0
Research methods	2	1
Extension research	10	0
Total	110	23

[a] Generally one time only.

You will note 10 of the 12 studies under "Organization of People to Participate in Extension" were used. I believe all of those mentioned are concerned with the National Home Demonstration study or with the peripheral reports on its State or county phases.

I might mention that I have exchanged followup letters with some of the respondents about the items that previously were unknown to me. As a consequence, we have secured Division file copies of several useful items, and I have arranged, or hope to arrange, loans of other items, some of which will be mentioned in the next Review. This suggests another advantage of the survey - achieving the awareness level with several valuable new contacts.

In addition, four studies from the 1956 Review, nine from the 1957 Review, and quite a number that will be mentioned in the 1960 Review were cited. There was an occasional reference to studies dating back as many as ten years, and to several with which I was not familiar. Among the latter, I am checking on those that appear to be of fairly recent origin.

Next we have a breakdown on use made, table 4. This table includes information on all studies specifically cited, other than those already included in the summary related to ESC 521. Teaching, training, and background usage continue to be major categories.

Table 4. How Extension Research Reports Have Been Used - By Those Who Cite Specific Studies Other Than Those Listed in ESC 521.

Category of use	Frequency of mention
Findings passed along to agents, others (with or without rewriting; as tables, summaries, newsletters, etc.)	17
Staff conferences, seminars, study groups, workshops (regional, State, county)	14
Basis for program planning (general, special areas)	14
Background	
Research (own, others; student, professional)	13
Administrative decisions, actions	7
Talks	5
Training	
Local leader	6
Inservice	5
Special agent groups	4
Induction	2
Teaching (preparation, resource materials for)	
Regular undergraduate or graduate courses	6
Summer school classes	3
Special agent groups	2
Basis of designing handbooks; other study, teaching, training materials	6
Reference, resource material	5
Evaluation	3
Supervision	3
Orientation	2
Comparison of findings, companion studies	2

There is a suggestion that this array of studies may contain a goodly number that were done by the respondent or others from the State, possibly as a deliberate prelude to purposive action. For this reason, they may have more direct application and may not require replication, modification, interpretation, or softening up. Therefore, we see the major use is passing along findings to agents and others within the system who might benefit from knowledge of them or might be guided in their actions by them. Further support of this tentative hypothesis is the frequency with which use in program planning and staff assemblies of all kinds is mentioned.

GENERAL STATEMENTS

Probably the most informative, but hardest to deal with, are the replies by letter in which respondents offer summary statements of how extension research know-how has been made use of by themselves and others with whom they are associated. In most cases these respondents were speaking for rather large staffs of extension educators or well-staffed State administrative-supervisory-research-training teams.

Table 5 is a rundown on the titles of those who sent in letters containing comments relevant to this survey. Omitted from consideration are the strictly cover letters that accompanied forms geared to specific studies, and those indicating no report would be forthcoming or that there was nothing to report.

Table 5. Positions Held by Persons Who Replied in General Terms by Letter About Use Made of Extension Research Reports.

Title	Number
Rural sociology professor, specialist	5
Extension education professor, specialist	4
State home demonstration agent	3
Assistant director	2
State training specialist	2
State 4-H Club leader	2
Extension methods specialist	2
Adult education professor	1
Leader, extension research	1
State research and training leader	1
Extension training and development leader	1
Extension program specialist	1
Extension supervisor	1
Extension studies specialist	1
Total	27

If all the positions indicating research or training leadership were to be consolidated, they would be the two largest categories. Otherwise, two subject-matter department categories are the leaders - rural sociology professors or specialists and extension education professors or specialists. All are State level positions; most of them definitely are part of the formal extension setup in the State, and most of the others are in departments having commitments to or working relations with Extension.

It took some looking to spot all the different kinds of use these folks mentioned. I may have missed some and may have seen a few that were not there. At any rate, table 6 contains the categories I thought I saw, together with the frequency of mention.

Table 6. Major Categories of Use Reported by Those Who Replied in General Terms

Category of use	Frequency of mention
Maintain files of bibliographic materials, reports, index cards	8
Build reference list of sources for reports, papers, theses, etc.	7
Check Reviews for studies on special topics	7
Prepare teaching notes, references, reading assignments	6
Make assembled materials available to students, professional staff	5
Workshops, seminars, staff meetings	5
Administrative decisions	4
Summaries to agents, staff	4
Design evaluation, teaching, training materials	3
Check for relevant, comparable studies	3
Thesis work, prelims	2
Counseling, orientation with students	2
Talks	1
Agent training meetings	1
Specific studies reviewed by staff members	1

As might be expected, formal education considerations are prominent on this list. Many of those mentioned are related to getting ready for teaching or study situations. Establishing and maintaining files in available form are major considerations. The training aspects - staff assemblies, summaries to agents, and agent training meetings - are on the list but do not figure so prominently as might be expected.

QUOTABLE REPLIES

I encountered quite a few very quotable passages among these letters. Sometimes the contents gain or lose stature when you know who is making them. I am not acquainted with very many of my list of potential respondents; but I do have some acquaintance with almost everyone who wrote more than a cover letter. Although I would like to think they "put out" a little more because of our acquaintance, however casual, I am forced to believe it is more likely to be a factor of their greater involvement in the subject matter of this survey.

Possibly because of our reference to ESC 521 as a check list, many chose to offer their ideas about the Review and to tell how they use it. Some of their comments are very flattering; others are distressingly not flattering. Some confined their comments to this aspect; others included it in their general statements. One senior professor, who is now concerned primarily with graduate teaching and counseling work, had this to say:

> ...I regret I cannot give you specific illustrations. My use of the Review of Extension Research is quite indirect in teaching Rural Sociology at the graduate level to about thirty thesis students each year. They are the ones who make the specific use of findings of extension studies. I refer them to the Review

of Extension Research and they use the findings for their term papers and thesis projects. The Review of Extension Research is a standard reference for our graduate students, particularly those who are majors in extension education and minors in rural sociology.

Here is a statement by a respondent from a State where there is not a great deal of graduate student activity but an enthusiastic extension staff:

We use the Extension Research Review as resource material whenever information is needed on an area of work. Generally the article is summarized for staff or committee information. Our own studies are generally tied closely to a certain problem where we feel additional information is needed before an administrative decision is made.

Here is one from a State where extension research and educational work is booming. Three recent Ph.D's on teaching-research-training appointments appear to be doing quite a setup job there. One of them included the following paragraph; another included a longer but equally enthusiastic commentary.

Please note that we took five consecutively numbered items from ESC 521. We used at least a dozen of the references listed in your Review of Extension Research for 1958, and many more for 1959. The Review provides us with the kinds of information useful for thesis work, departmental study, interpretation and general distribution among interested workers in...(this State)... and background material for cooperating and advising with other administrative project personnel in the conduct of studies, formulation of policy and other related matters.

Two relatively lukewarm comments - from the same State, incidentally - went something like this. The first is from an old hand; the other is from a relatively new person. The second respondent may be commenting about our "ER&T Research Summaries" as well as the Review.

We would have to be very general in answering the questions. Graduate students use the reports to a considerable extent. The reports are used by administrators to aid them in decision making. The extent and amount of influence on administrators would be difficult to determine. The State staff generally uses the reports as sources to be searched when a particular problem arises. The research never quite fits the specific problem situation but it does provide some clues.

. . .

I do not think we can say specifically that a certain item of research has been used with tremendous impact on the ...(State)...extension program. However, it is my understanding that the research summaries have been passed around to staff members for their self-education and have been available for graduate students to read. Also, a few of the research summaries have been forwarded to the county extension personnel for their enlightenment. Therefore, the research summaries have been a part of the operational knowledge of our staff.

Probably the most glowing reference, at least insofar as the closing sentence is concerned, is this one:

My students utilize your USDA index to research constantly and I maintain in my office fairly complete files of studies and bulletins related to participation, adoption, organization, and similar subjects of interest in rural sociology and adult education. These are a major source of data for dissertations. In my work...we utilize your annual index to identify the studies and then use the studies themselves...I know of nothing I use more extensively than the Review of Extension Research which you are so kind to send me.

Although there may be some doubt as to whether he was referring to our Review or to the USDA "Bibliography of Agriculture" in his opening remarks, I choose to believe he had the former in mind.

However, all was not sweetness and light. This came in from a supervisor:

I was unfamiliar with this publication until I "dug it out" of our files. You can see that our communications are good. The material in ESC 521 has not been used in our State as far as I know.

Although I have reason to believe this is not quite an accurate statement statement, this respondent, who is not on any of our special mailing lists, may be able to share the blame for his lack of awareness with a faulty publications distribution system.

Here is a statement from a respondent so involved in teaching he must rely on sporadic observations and word of mouth to remind him of how findings from extension research reports are put to effective use.

Unfortunately, staff members...(here)...do not have the opportunity to follow up on the actual application of extension research findings in the States and counties. Through contacts with State Directors and other responsible extension officials, we are often advised of the use of extension research findings by the various States. Extension research findings in the areas of administration, supervision, and program planning have and are being used rather freely by State and county workers in making needed adjustments and changes in programs, methods, and organization.

...(Our)...staff members make much use of extension research findings in: (1) Revising and developing content for graduate courses in extension administration, supervision, and program planning; (2) preparing talks to be given to groups throughout the country; and (3) developing content for extension workshops and seminars...(Students)...and staff members also make extensive use of extension research findings in designing research projects, preparing for course work, and reviewing for preliminary examination.

Several took the occasion to comment on the lack of or probable advantages of having a formally assigned studies or training person on the staff. Here are two brief references to this problem.

Since we do not have a person on full-time research and teaching, we have found it quite difficult to do a satisfactory job in getting the research information out to the staff. However, we have used the Research Reviews to a great extent in preparing reports, teaching plans, talks and especially for training the 4-H leaders and agents who are responsible for the 4-H Club programs.

. . .

We do not at present have a person on our staff who does research and training work; therefore, what work along this line which is done must be split up among other staff members. Basically it is handled by the supervisory staff.

Some expressed their concern that more was not being done in their States about passing along extension research knowhow. Here are two such statements. Both authors, incidentally, completed their doctoral programs within the last two years and have high personal regard for extension research. However, they seem to doubt that others share their enthusiasm.

Although I have an appreciation for research, I find that I have too many "irons in the fire" to use research as I should. Every once in a while I resolve to do better but still haven't really done any good browsing through research since graduate school days. Believe we need a State staff member devoting time to extension research and training to put us on the spot once in a while...Extension needs to be made more conscious of the value and usefulness of research. How is the problem. Am glad to see you are concerned.

. . .

I must say that, up to this point, we have had no organized method of getting the results of extension research out to our total staff. This is something that we have been giving consideration, but as yet have not developed any standard procedure. We have in mind organizing a periodic release that might highlight current research of interest to our extension staff members, hoping that this type of publication might stimulate added interest in the value and use of extension research.

I feel that many staff members need to develop an appreciation for this type of research and how it can contribute to their job effectiveness. Research in areas of technical subject matter is recognized by staff members as being highly important. I'm not sure that the same value, to date, is placed on extension research in the broader areas of our extension program.

I feel that we are not making as good use of extension research reports as we might. I believe that we are faced with an educational job to try and help our extension staff members realize that many of the studies that have been conducted around the country have certain implications regarding work here in this State. We sometimes have a tendency to feel that extension approaches are unique by State and sometimes by county. I believe that we carry this feeling to the extreme at times and thus fail to apply the findings of certain research studies made in other parts of the country to situations locally.

Here is another expression of concern about the quality of extension research.

During the past year, I have attempted to read (original and abstract) every study on 4-H leadership reported in Extension Service Reviews...While I may well have missed a few, my general impression is that many of these particular studies were carried out without sufficient reference to basic research reported on leadership in small groups. Most of them do not make explicit the hypotheses being tested and it is difficult to find empirical support for generalizations that are offered...Before launching further extension studies let there be a

concerted effort, among all of us interested in the application of social science research to action programs, to carefully examine, synthesize, and discuss the generalizations or hypotheses that are scattered throughout the literature.

Another respondent, who complied with the specific instructions by filling out five forms and attaching "evidence" to each, also included a four-point commentary on his philosophy on extension research.

Here are a few ideas I have arrived at concerning use of extension research findings.

1. Findings will be used by action people to the extent that they are personally involved in planning, executing, and interpreting the research project and the findings.
2. An action program, of necessity, must be concerned with a rather comprehensive problem or many situations. One or two research projects can only focus on some aspects of that problem or situation. This means that one or two studies do not answer all the questions that might be raised about a problem or a situation. For example, some counties want to carry out a one-shot survey and assume that the findings will answer all the problems about program development and, in many cases, will provide evaluation of the existing program. These kinds of questions can only be adequately answered by a whole program of research along with good logical thinking on the part of the program developer.
3. Translating empirical findings into action is extremely difficult. This is an area about which we know very little.
4. It seems extremely difficult for some people to change their behavior or their program even though the findings would strongly suggest a change. For example...we found that few nonfarmers were listening to the noon radio program. A few weeks ago, I asked one of the agents what they were doing about adapting their program to the nonfarmer, and he said they really haven't done much of anything about changing it because they feel that the survey was conducted when many of the nonfarmers were deer hunting and that the situation would likely be different if the survey were taken now. There may be some truth in his observations, but I really believe that this agent wants to reach farm people and is not interested in the nonfarm people for this radio program.

This final quotation is the most comprehensive statement of use I received. It comes close to being a summary of the others I have included.

In this office we maintain a file of the Reviews of Extension Research, summaries of studies conducted in...(this State)... and elsewhere, your research and training research summaries and other materials of this nature. These are made available and are rather continuously used by agents taking graduate work or looking for references in relation to thesis studies. Copies of the Review of Extension Research are routed to the administrative staff and supervisory staff for information. At each of our monthly supervisory staff meetings we select one research study which we feel has definite application and implications for...(our)...extension program and this is reviewed by one of the supervisory staff, and discussed by the entire group.

In January of each year we have our Extension Workshop...which is attended by county staff members and a few State staff specialists and carries graduate credit of four hours. Reviewing of many extension research projects is a part of the requirement for completion of this course. The extension research studies form a basic portion of the references which they use in developing the final report for the course.

Recently we have established a card index file of research studies conducted by extension personnel both in...(this)...and other States. This index is also available to all of our staff for help in locating studies in research which may be applicable to areas of their interest or need. Studies particularly in the areas of Market Information for Consumers, National Home Demonstration Study, studies in the area of 4-H Club work, and studies on the extension organization and structure have been widely used in improving our extension program.

EVIDENCE

You may recall we asked for evidence of use made of extension research studies by suggesting that respondents attach copies of instruments used in passing on findings, executing recommendations, conducting educational or training work, making evaluations, and the like. We got quite an assortment of attachments, but few of the variety we desired.

Most respondents took the instruction to mean for them to attach a copy of the study cited. This was of little help to us, unless we did not happen to know of the study. As I stated earlier, whenever this occurred I immediately made an effort to secure file copies.

However, there were a few examples of administrative materials that were designed on the basis of research results - contract forms, leave policies, and the like. There were a couple of examples of "softened up" presentations of research findings, some training or discussion aids, a workshop outline, and several self-appraisal reports prepared by extension club members with the aid of county personnel and State specialists.

SUMMARY

For whatever it may be worth as resource material for this seminar, this is my statement of findings from the mail survey of use made of extension research reports. Included are comments on use by three major groupings of replies: (1) Those that deal with items cited in ESC 521, (2) those that deal with other extension research reports, and (3) those that comment on use in general terms without citing specific studies.

The first or "aided recall" group may be characterized by uses of the background, resource, or reference variety. The research was most likely to have been done elsewhere and has to be transposed or adapted in some manner before it can be used locally.

Studies in the second category tend to be of the "our own study of our own problem" variety. For this reason there is less need for adaptation, so the major uses

consist of passing along findings, incorporating into subject matter and methodology for training, and serving as basis for followup studies.

The remaining category, in keeping with the manner in which they are presented, suggests uses of an archivist, depository, or educational resource nature - organized into useable files, properly cross-indexed; and made available to staff, students, and others for informational and educational purposes and as resource and background material for planning, teaching, and training.

Possibly the major contribution of this survey is the array of ideas gleaned from the quotes from letters submitted from places where extension research materials are used too extensively to report on use of separate items. Although it is likely some of the participants could have listed many of the uses mentioned by others, had it occurred to them to do so, it is equally likely that this listing will suggest uses they will want to try in their own extension educational work.

An an example of objective analysis of findings from a carefully designed and executed research problem, this report leaves much to be desired. However, the thought kept occurring to me that the original problem is important enough to all of us to warrant treating this venture as the exploratory phase of a more intense study. These suggested uses could be incorporated into a fairly impressive checkoff type instrument. If it were to be submitted to a sample or all of the State studies and State training leaders and the chairmen or heads of departments offering degrees in some phase of Extension, I am certain the findings would be both enlightening and flattering to our collective ego.

I slowed down considerably when I started on the quotes but, in view of the limited objective data available for exploration, I considered this to be the most chewy material to offer this group.

CASE PRESENTATION

of the

ARKANSAS EXTENSION PILOT COTTON PROGRAM AND EVALUATION PROJECT

Being Conducted By

The Arkansas Agricultural Extension Service
In Cooperation With
The Federal Extension Service, U.S.D.A.

John M. Cavender and Randell K. Price [1]

INTRODUCTION

Background or History

The need for the Arkansas Cotton Production Project was emphasized by the report, "A Study of the Cotton Production Improvement Program in Nine Southern States," (ESC 515). This study was conducted by the Federal Extension Service in cooperation with these nine States.

Two of the implications cited in this study were:

1. A study of cotton production with a random sample of farmers is needed to determine the educational needs of cotton farmers other than demonstration farmers.

2. An experimental study and an educational program involving experimental and control counties in a State are needed to supply additional insight into the educational problems of quality cotton production.

Plans for the Arkansas study were finalized and the data were collected in 1958.

It was felt that a study of this type would be of particular interest and benefit to the Arkansas Extension Service in the promotion of an educational program among cotton producers of the State. During the past 35 years, cotton has accounted for 30 to 70 percent of the total cash farm receipts in the State. The U. S. Census shows that in 1959, 37 percent of the 90,009 farmers of the State produced cotton. Also, that in spite of cotton acreage control, one of every four of the 5,341,956 harvested acres was in cotton.

According to the 1959 Agricultural Statistics for Arkansas, prepared by the Crop Reporting Service, cash receipts from cotton amounted to $292,093,000, or 59 percent of total cash receipts from all crops.

1/ Extension Research and Training Specialist and Extension Education Specialist, respectively, Arkansas Agricultural Extension Service.

The Arkansas Extension Service has a cotton specialist. His work is supplemented by two other agronomists, three engineers, three entomologists, and a plant pathologist, all of whom are on the State Extension staff. The work is further supplemented by members of the University's resident and research staffs.

OBJECTIVES

1. To determine by a benchmark survey the educational needs of cotton farmers relative to cotton production and marketing in a control and an experimental county. The educational needs will be determined in relation to minimum levels of knowledge, understanding and practice adoptions agreed on by agricultural specialists in the Arkansas Extension Service and in the Federal Extension Service.

2. To plan and conduct a county cotton educational program in the experimental county based specifically on the needs identified by the survey of the county. This will include (a) statements of the educational problems to be undertaken, (b) statements of specific objectives to be accomplished, and (c) identification of the specific methods and techniques to be used in the action educational programs that will be conducted.

3. To determine the changes resulting from the educational program in the experimental county. The program will be based on carefully identified needs and problems. Selected methods and techniques will be used.

4. To determine the changes resulting from the program conducted in the control county. This program will be based on the information the planning committee and the agent bring together, and not the findings of the benchmark survey. The plan of work and the action program in this county will be developed and carried on as they usually are.

5. To compare changes in the cotton farmers' knowledge, understandings and practice adoption in the experimental and control counties.

SAMPLING

According to the U. S. Census, 70 of the 75 counties in Arkansas produced cotton in 1959. Twenty counties in the eastern part of the State had 88 percent of the State's total acres and 91 percent of its production.

Counties in this area were the only ones considered for the experimental and check counties. A special extension committee made up of administrative, supervisory, and specialist personnel made the tentative selection. Poinsett County was selected as the experimental county and Phillips County as the check county.

The following information from the 1960 U. S. Census gives a comparison of the cotton production in these two counties.

County	No. of cotton producers	Total cotton acres	Total production in bales	Average yield per acre
Poinsett	1,707	88,633	101,434	572 lbs.
Phillips	1,883	75,376	87,020	577 lbs.

In 1959, Poinsett County ranked third in acres and fourth in production; Phillips ranked fifth in both acres and production. Each county has a comparable amount of delta land.

The county extension staffs in each of these counties were comparable in size and training. No staff changes were being considered in either county.

The district agent first discussed the proposal with the Poinsett County Extension Staff. Following the county staff's acceptance, plans were made to present the idea to the county cotton committee.

Considerable interest was demonstrated by members of the committee. It voted to make a request that Poinsett County be the experimental county and assured the county, State and Federal Extension Services their cooperation and support to the project.

Through the cooperation of the State office of the Agricultural Stabilization Committee, an information card was prepared for each farm in Poinsett and Phillips Counties having a cotton acreage allotment. The name and address of the farm operator, acres in cotton allotment, total acres in farm, and farm A.S.C. serial number were given on each card. Allotments for multiple holdings were combined where these were under one operation.

These cards were mailed to the Program Research Branch, Division of Extension Research and Training, F.E.S. The samples were drawn by Mrs. Laurel Sabrosky on a stratified and randomized basis. From these samples 250 operators of cotton producing farms were interviewed in each county.

QUESTIONNAIRE CONSTRUCTION

Extension specialists having responsibility in educational work in cotton production assumed the leadership for the questionnaire as it applied to their particular area. The different areas included:

General information
Soil fertility and fertilizer
Land selection, drainage and compaction
Irrigation, drainage and land grading and leveling
Cultural practices
    Varieties and quality of planting seed
    Seedbed preparation and cultivation
    Weed control

Disease control
Insect control
Harvesting, ginning and marketing
Sources of information

Individual specialists listed subject matter and/or practices from their area of work which they felt an efficient cotton farmer should know and understand. From these, questions were developed for inclusion in the questionnaire. Those questions which showed the most promise of being effective measurements of the farmers' knowledge and understanding were included in the questionnaire.

The original draft of the questionnaire was 50 pages in length. Following the pretest, 13 pages were eliminated. As in the foregoing procedures, personnel from the Federal Extension Office assisted in the pretesting.

The questionnaire was structured for machine tabulation. Two questionnaires were developed, one for the interviewer and one for the producer. They differed in that the open-end questions did not have probable answers listed on the producer's copy.

DATA COLLECTION

Administrators and men supervisors and specialists conducted the interviews in both counties. They were given training prior to the beginning of the survey. Each was given a copy of instructions prepared especially for this survey.

Before interviewing was begun in Poinsett County, the county cotton committee met to discuss how each of its members could assist so as to facilitate interviewing. A special letter was prepared for the farmers included in the sample, advising them of the survey and soliciting their cooperation. Special newspaper articles and radio programs were used to inform all the people of the county about the study being made.

The interviewing was begun first in Poinsett County. All interviewers worked out of the county extension office. They were able to meet there each evening to discuss problems encountered during the day.

One and one-half to two and one-half hours were required to complete an interview. In completing the total of 500 schedules in the counties, the interviewers averaged two and one-half schedules per day.

In order to facilitate the interview, the farmer was given his copy of the questionnaire to use during the period of the interview. In Poinsett County the farmer kept his questionnaire; in the check county the farmer's copy was picked up by the interviewer.

The farm operator, i.e. the person responsible for decisions, was interviewed. Generally, the interviewers were well received. The farmers cooperated willingly in supplying the necessary information.

DATA ANALYSIS

The data were machine tabulated. Straight totals were run and percentages were calculated for all questions. Copies of these were made available to all specialists. From these tables, additional tables were developed to further simplify presentation.

Each specialist developed a preliminary report for his subject-matter area. These were combined into a preliminary report for the survey.

From the preliminary report and tables, each specialist determined the relationship he desired for his area. After these were developed, specialists selected those relationships seeming to have significance in planning an educational program and gave their own analyses, interpretations and recommendations. From these, a final combined report is being prepared. Meanwhile, specialists are utilizing this information in their work with agents in planning the Poinsett County program.

DATA PRESENTATION

General Information

The study accumulated some rather detailed general data about the farmers included in the survey. Data relating to age, tenure, education, operator's role, etc., are included in this section. However, for this presentation, only a few characteristics of the population will be used. These will be enough to give a general picture of the population.

One-third of the farmers interviewed were under 40 years of age. Fifty-five percent of them were between the ages of 40 and 60 years. The remaining 12 percent were over 60 years of age.

Forty-four percent were full-time farm workers. Slightly over half were primarily responsible for supervising others.

Twenty-two percent were owners only, while 32 percent were renters only. The remainder fitted categories of various combinations, such as owning some and renting some acreages.

Education attainment ranged from no formal schooling to completed master's degrees. One-third of those interviewed had less than an eighth grade education. Slightly less than one-third had completed high school. Sixteen percent of the respondents had some college work and approximately 6 percent had completed a college degree.

Cotton and soybeans were the major crop enterprises on 51 percent of the farms. Less than one-fifth of the farms had livestock as a part of the farming operation. One-third of the farms were medium to highly mechanized.

Now, let's consider examples from the sections dealing with plant diseases and insect control. These will be discussed briefly in order to point out the type of findings that the study revealed.

Plant Diseases

Various relationships were tested in analyzing the data relating to farmers' understanding of plant diseases. The ones seeming most relevant were those relating to the level of education of the farmer, his age, and the size of his cotton operation.

As might be expected, farmers' understanding of plant diseases was much lower than for some other items in the study. For example, insect problems, specifically boll weevil problems, have plagues the farmer for the last decade or so. Thus, concentrated efforts have been directed toward their control. This has not been the case with disease problems. Though diseases were prevalent, educational efforts were not concentrated on them so much as on insect control and some other aspects of cotton production.

In general, our data show that as the formal educational increases so does the level of understanding regarding cotton production practices and recommendations. As age increased the level of understanding decreases and as the size of the cotton operation increases so does the level of understanding.

As an example, data in figure I (appended) depict the farmers' ability to identify angular leaf spot. Farmers were shown a picture of cotton leaves and bolls infested with angular leaf spot and asked to name the disease. Only 7 percent of them were able to identify the disease. Approximately three-fourths said, "I don't know," and the remainder gave an incorrect answer.

Only 5 percent of those with less than an eighth grade education could identify the disease, contrasted to 23 percent of those with some education beyond high school. Eleven percent of those under 40 years of age identified the disease, as compared to none of those over 60 years of age. Less than 2 percent of those farming 100 acres of cotton or less identified the disease, as compared to 30 percent of those farming 350 acres or more.

As another example, a recommended practice in cotton production is that of planting treated seed. Nearly all farmers planted treated seed, but data in figure II (appended) reveal that 63 percent of the farmers knew that they should plant plant treated seed to control seedling disease. Various other partially correct reasons were given by other farmers, but 13 percent indicated they did not know why farmers should plant treated seed.

Age does not seem to be related to the farmers' knowledge of why treated seed should be planted, but as education and size of operation increase, so does the percentage of farmers who know why treated seed should be used.

Contrast this now with a companion question, in which farmers were shown a picture of plants affected by seedling disease and asked "What will aid in controlling this condition?" Approximately one-fourth of the respondents named such things as "delay planting until favorable soil and weather conditions exist," "better drainage," "better seed," etc. All of these things would "aid" in the control of the disease, but almost half, 47 percent, of the respondents did not have anything to suggest. Does not this imply that the farmers' level of understanding or association is not so great as is desirable? For example, in figure II we saw that 63 percent of the farmers knew that they planted treated seed to control seedling disease, but in

figure III (appended) we find only 23 percent of the farmers saying that seed treatment will aid in the control of seedling diseases.

Education of the operator was again a factor. Only 9 percent of the respondents with less than 8 years of schooling named seed treatment, as compared to 46 percent of those with over 12 years of schooling. A much higher percentage of the younger farmers named seed treatment than did older farmers. Also, as the size of the cotton operation increases so does the percentage of those suggesting seed treatment as an aid to controlling seedling disease.

Insect Control

For a number of years cotton farmers have faced the hazards of insect infestations and damage to their crop. They appear to be more concerned with the problem of the boll weevil than with some other aspects of cotton production.

Data show that only about 7 percent of the respondents of this study said that they did not use spray or dust control measures for at least one insect. However, this does not mean that these farmers were applying insecticides according to recommendations, nor that they knew the recommendation. On the other hand, data show that three out of four farmers interviewed did know extension recommendations on when scouting should be done, and about the same proportion of farmers knew when boll weevil control measures should be applied.

Examples of relationships used here do not show such great differences in the level of knowledge and understanding as existed in the section on plant diseases, but the same trends are present: (1) As education increases, so does understanding; (2) as age increases, understanding seems to be less; and (3) as size of the farming operation increases, understanding increases.

As an example, data on figure IV (appended) show that 7 out of 10 farmers knew extension recommendations on when control measures should be applied for controlling boll weevils. A greater proportion of farmers with at least a high school education knew extension recommendations than did those with less education. Eighty-six percent of the farmers under 40 years of age knew when to apply control measures, whereas only 55 percent of those over 60 years of age knew the standards for determining when to apply. Six out of 10 farmers with less than 100 acres of cotton knew when control measures should be applied, as compared to 8 out of 10 farmers who farm more than 350 acres of cotton.

Bollworm

Farmers' understanding in relation to bollworm and bollworm control was not so great as with boll weevil. Data in figure V (appended) show that only 38 percent of the respondents knew at what stage of growth of the cotton plant to apply bollworm control measures. About one-third of the farmers with less than an eighth grade education knew the stage of growth, as compared to slightly more than one-half of those having more than high school education. More of the younger farmers knew the proper timing, but in the case of the size of operation, the highest percentage of those indicating knowledge of proper timing was found in the group farming 100 to 200 acres.

GENERAL OBSERVATIONS

1. The survey has been and is a valuable training aid. Since administrators, district agents and men specialists were involved in securing the schedules and in analyzing the data, each of them tended to look at his own field of work and ask himself questions about the effectiveness of teaching in his area.

2. We need simplification in our recommendations, teaching techniques and methods. Many of the interviewers felt that we have been instructing "over the heads" of many farmers. We have assumed that we have taught much more than farmers have learned.

3. Farmers cooperated willingly in the study and gave freely of their time for the long interview. Many seemed apologetic for their lack of knowledge and considered the process of the interview as educational to them.

4. Lack of understanding is sometimes due to faults in communication. Farmer terminology for certain things does not correspond to ours. For example, farmers speak of "sour" soil, but do not understand us when we speak of pH, though it is a commonly used term in the literature. The same could be said for some of the diseases, insects, and other factors involved in cotton production.

5. More assistance needs to be given to helping farmers understand and associate recommendations. Many were following recommended practices, but did not know why they were following them, nor did they associate them with their problems.

6. Extension needs to work more closely with suppliers of agricultural products, especially ginners. The study revealed that many of the farmers regarded the ginner, who in many cases is the fertilizer, seed, and insecticide dealer, as the prime source of information.

Figure I. Farmers' Ability To Identify Angular Leaf Spot

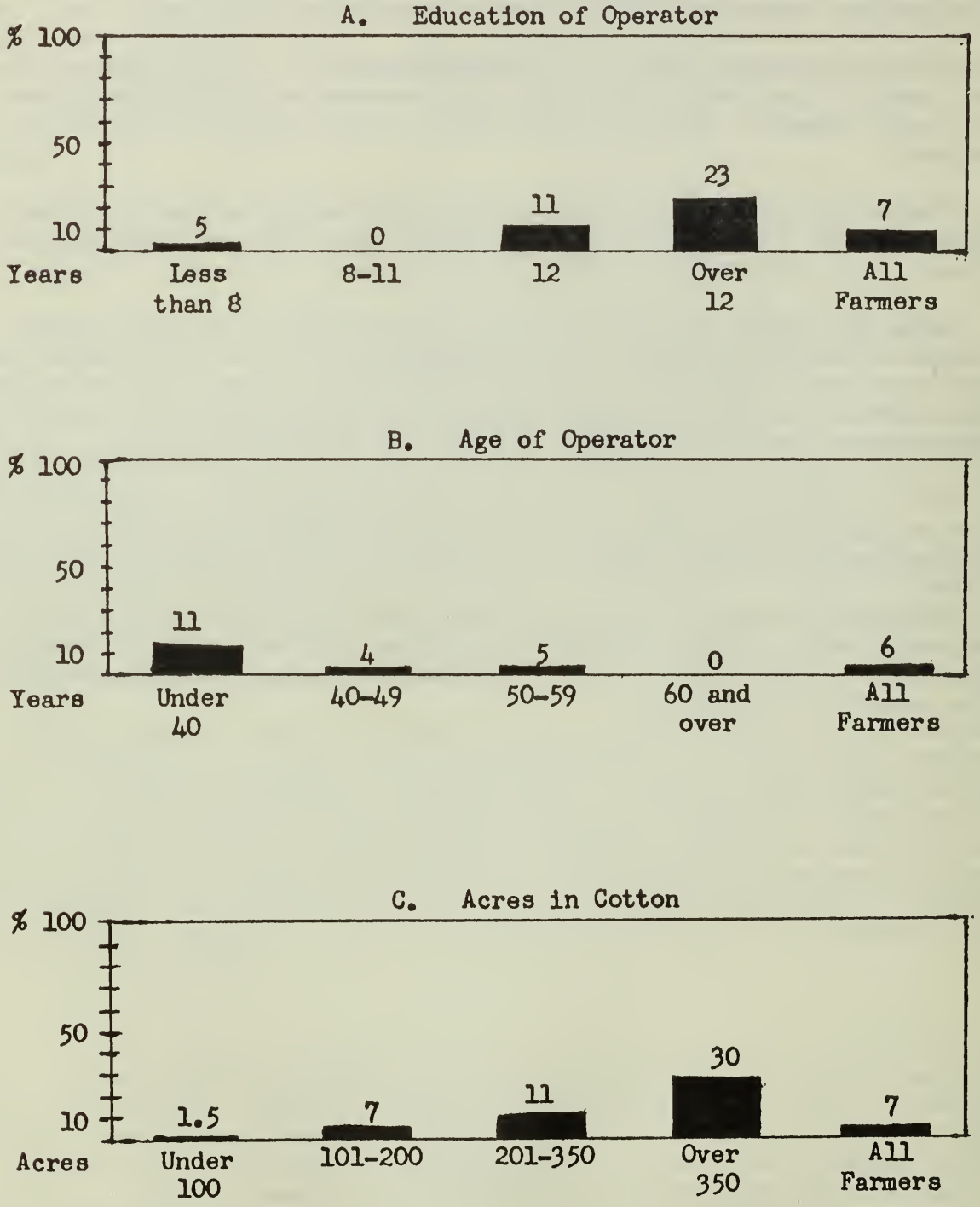


Figure II. Reasons Why Farmers Should Plant Treated Seed:

Percent of Farmers Giving the Reason as "Control of Seedling Diseases"

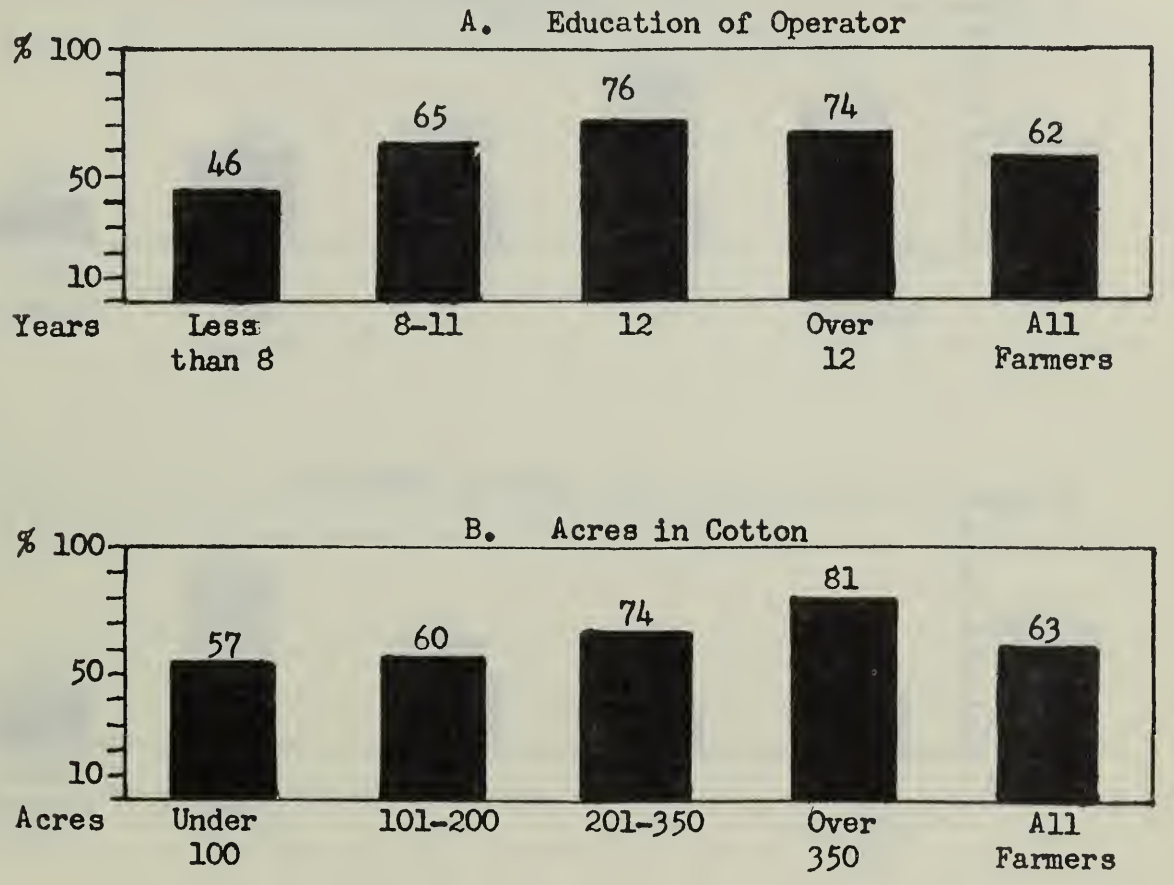
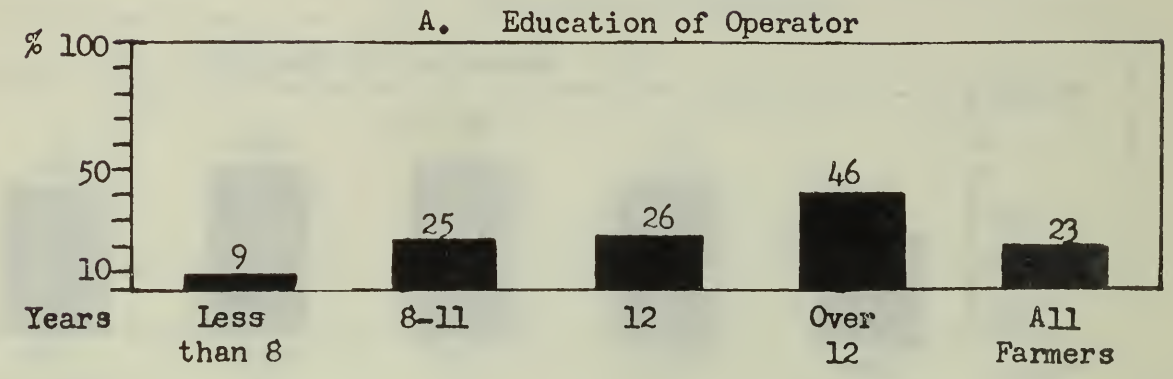
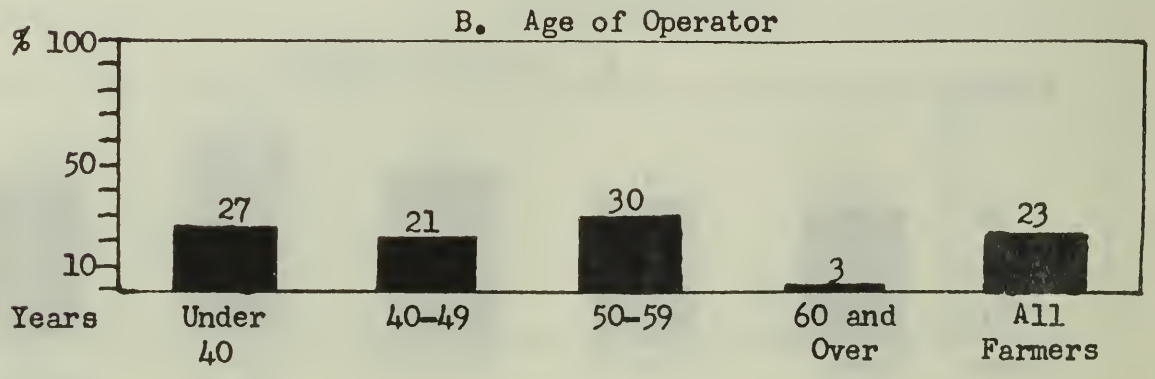


Figure III. Percent of Farmers Having Knowledge of Seed Treatment for the Control of Seedling Disease





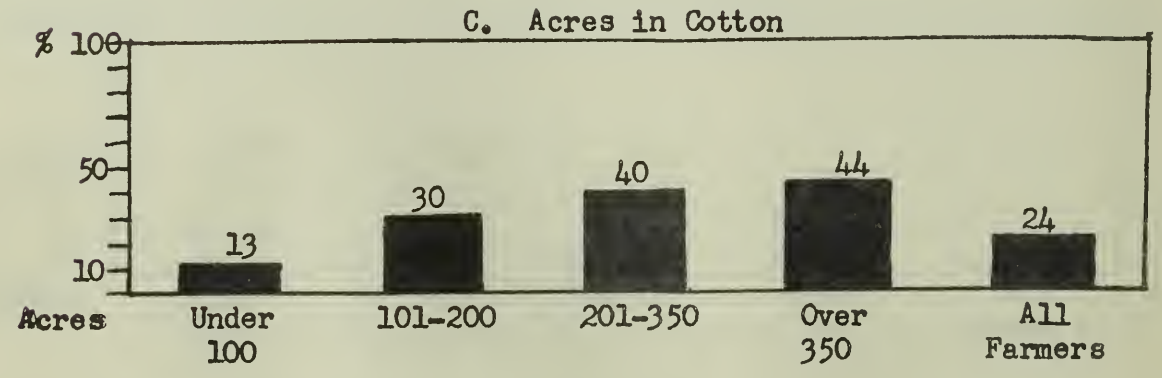
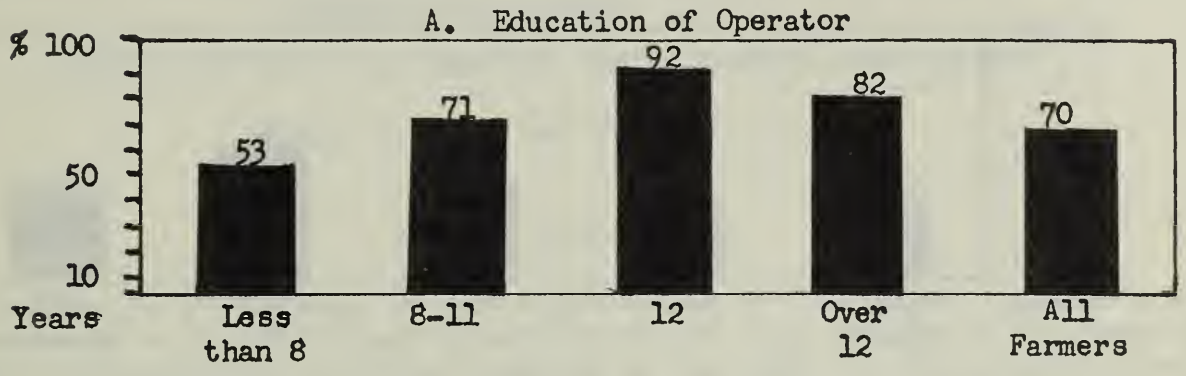
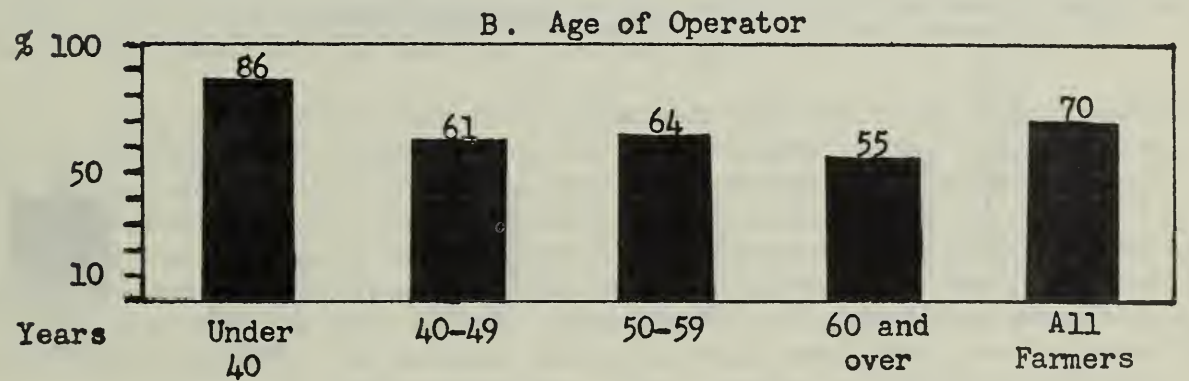


Figure IV. Percent of Farmers Answering Question "What is the Standard for Determining When Control Measures for Boll Weevil Should be Applied" in Line With Extension Recommendations





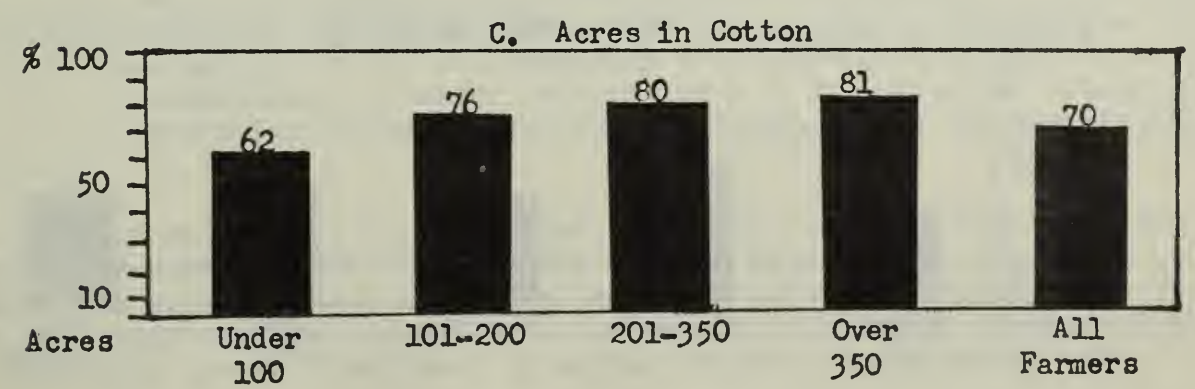
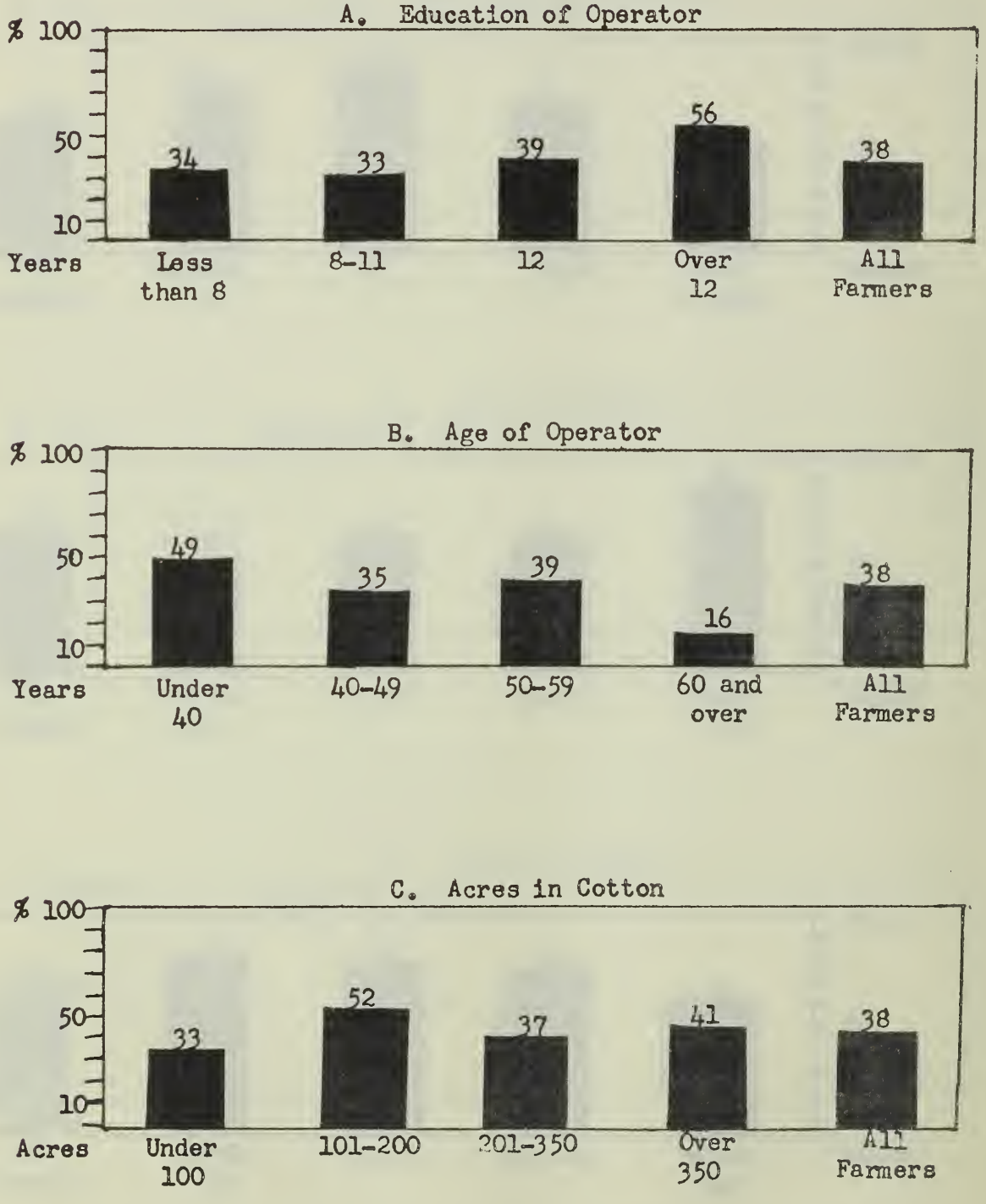


Figure V. Percent of Farmers Knowing at What Stage of Growth of the Cotton Plan Control Measures for the Boll Worm Are Essential



Part B.

Needed Research in Extension as an Organization

NEEDED RESEARCH IN EXTENSION ADMINISTRATIVE ORGANIZATION

Edgar J. Boone and James Duncan 1/

GENERAL INTRODUCTION

The continued effectiveness of any organization or institution depends upon its being examined in an objective and scientific manner, and upon the willingness of organization administrators to effect changes in the light of the findings of such an examination. This process, if it is well done, must involve a great deal of thought and planning, and perhaps considerable inconvenience on the part of members of the organization being studied. Changes in organizations, resulting from the findings of research, often are difficult to implement, since established patterns, responsibilities, and relationships must be disrupted and altered.

Our focus today is on the Cooperative Extension Service as an organization, and on the need for studying and scrutinizing it. Our subject is not new. Rather, it has occupied an important place in the thoughts of extension administrators for quite some time. The establishment of the National Agricultural Extension Center for Advanced Study at the University of Wisconsin, the support given graduate training in administration at the University of Chicago, Harvard University, and other institutions of higher learning, as well as the holding of a national research planning conference in administration and several administrative seminars, are indices of extension leader interest in administration. Too, scores of research projects concerned with problems of extension administrative organization have been planned and conducted.

It has been said, and rightfully so, that change is inevitable, and that the continued effectiveness of any social institution (organization) will depend upon its ability to meaningfully relate its resources to the changing complex needs and interests of its constituents. A major concern today is the effect of change upon the role of the Cooperative Extension Service and, consequently, its administrative organization.

Recently, several State Cooperative Extension Services have effected major organizational changes. It is assumed these changes were made in an attempt to more effectively focus resources upon the major problems confronting the people. The impact of such organizational changes upon the people will likely not be evidenced completely for some years. Even then, it may be difficult to determine the

1/ Respectively, Associate Professor, National Agricultural Extension Center for Advanced Study, and Associate Professor, Department of Agriculture and Extension Education, University of Wisconsin.

specific influence of organizational changes. However, the basis upon which the decisions were made to reorganize can be analyzed, and at least partially evaluated. The degree to which scientifically derived facts constituted the basis for formulating the decisions to effect organizational changes might well be one of the points of inquiry in such a study.

In order to develop the subject, "Needed Research in Extension Administrative Organization," three major content areas must be examined. First, I shall attempt to develop a conceptual definition for organization as it applies to the Cooperative Extension Service. The second, and major, effort will be to identify and briefly describe specific areas in extension administrative organization warranting research. Third, I shall discuss briefly the methods that can be utilized in planning and conducting research on extension administrative organization.

EXTENSION ADMINISTRATIVE ORGANIZATION DEFINED

The term "organization" is given several meanings by the scores of writers on administration. Recognition is generally given to both formal and informal organizations. Two meanings frequently are used to describe the formal organization, the noun meaning and the verb meaning. For this discussion, I have selected the Clark and Evans[1] (See corresponding numbered item in appended bibliography.) definition of organization: "Organization is the medium through which individuals and groups collectively seek to attain stated objectives."

The verb phase of the meaning is often represented by saying that an organization, as just defined, is developed as a result of engaging in the process of "organizing resources" which is accomplished by (1) assembling and arranging the various resources available to the organization in that pattern, or combination, which appears more likely to result in attainment of the stated objectives of the organization than any other pattern and (2) clearly specifying the responsibilities, establishing the working relationships, and developing policies to guide the use of such resources.

An informal organization is present in every formal organization, and is the system of interpersonal relations which forms to affect or influence decisions made in the formal organization. This informal system is omitted from the formal scheme. It may be in support of or in opposition to the formal scheme. The informal organization is a dynamic structure of special interest groups.

I shall focus my emphasis on research needs in formal organization while my colleague, Dr. Duncan, will discuss research needs in informal organization.

RESEARCH NEEDS IN ADMINISTRATIVE ORGANIZATION

In describing research needs in administrative organization, our plan is to (1) identify some of the major research areas in organization, (2) describe briefly some of the research that has been done in each of the areas, and (3) point up specific needs within each of the areas warranting additional research.

Research Needs in Formal Organization

Defining and Interpreting Objectives of the Cooperative Extension Service

Almost any definition of organization states that the purposes of administration are to carry out the objectives for which the organization exists. Granted that the broad purpose of Extension is stated in the Smith-Lever Act and is spelled out in some detail in State laws, there still remains a need for defining the objectives of the Cooperative Extension Service, and for exploring the several ways in which the objectives may be interpreted.

How often have you heard remarks like this? "Everyone knows what we are trying to accomplish; let's get on with the job." Statements of this kind are not uncommon among extension workers. Very often, the importance of spending the time necessary to determine objectives is not realized by the professional extension worker. Because of this, we find professional extension workers so concerned with their on-going procedures and activities that they lose sight of what it is they are trying to accomplish. They fail to realize that objectives should be the criteria by which organization and procedures are determined, educational content is outlined, materials are selected, teaching procedures and learning experiences are developed, and accomplishments are evaluated.

Several major studies relating to organization (Creech,[2] Dunlap,[3] Frischknecht,[4] Earle,[5] Scheel,[6] Brown [7] and possibly others) reveal that the several State Extension Services studied had rather vague ideas as to what constituted their objectives. References were made to the preamble of the Smith-Lever Act as objectives by three State Extension Services. This seeming lack of clarity in understanding the objectives of Extension is further evidenced in responses obtained from Center fellows in attempting to describe their respective Extension Services.

The real concern is over the emphasis being given to reorganization or changes in organization without due regard to the ends that Extension is seeking to achieve. Changes generally are oriented toward management, on-going procedures, and activities rather than the objectives of the Extension Service. While some attempt has been made in the studies noted to define the objectives of Extension Services, in none of them has there been an attempt to analyze Extension's organization in relation to the purposes for which Extension was established.

Administrative Theory and Its Application to Organizing and Administering a State Extension Service

There is real need for understanding attempts to develop theories of administration in order to draw upon those that have application for organizing and administering a State Extension Service. In referring to the body of theory relating to administration, there is need to determine the extent to which the principles developed by the several writers in administrative theory, and applied by Clark and Evans[1] to Cooperative Extension, can be used as guides in analyzing extension administrative and organizational processes, and in deciding upon needed changes in the administrative organization. These principles include:

1. Hierarchial principle (scalar principle)
2. Line-staff relationships
3. Clearly defined delegation of authority and responsibility for individuals, and groups within the organization
4. Assignment of authority commensurate with responsibility
5. Span of control
6. Maintenance of clear two-way channels of communication
7. Flexible, modifiable organizational structure

A number of exploratory studies, (Creech,2/ Dunlap,3/ Brown,7/ Axinn,8/ Buswell,9/ Smith,10/ Hyatt,11/ Carter 12/ and others) designed for purposes of analyzing extension organization in relation to certain notions of administration, recently have been completed. Findings obtained indicate that considerable variations exist among the several organizations in conforming to the conditions implied in the selected principles of administration. There is need for additional study to determine the degree to which certain principles of administration have application for organizing and administering State Extension Services.

Administrative Organizations Needed to Effectively Marshall and Utilize Human and Physical Resources to Achieve the Stated Objectives of the Extension Service

Organizations may be viewed as the media through which individuals and groups collectively pool their efforts to attain stated objectives. Successful attainment of stated objectives depends to a large measure upon the manner in which resources are assembled and arranged, responsibilities are specified, working relationships are established, and policies are developed to guide the use of resources.

The real need in research is that of determining the extent to which organization facilitates or hampers achievement of stated objectives. To the writer's knowledge, few studies have attempted to appraise the extension organization in relation to its objectives. One of the difficulties of evaluating the effectiveness and efficiency of educational organizations in general is the lack of clearly-defined criteria for determining the quality of behavioral changes effected in people.

The effectiveness and efficiency of an industrial organization can be more readily determined since its objective generally is some tangible product built to specifications. This is not to imply that the effectiveness and efficiency of an educational organization in relation to achieving its objectives cannot be determined. Rather, it is to emphasize the need for careful planning and studying of the purposes for which the organization exists before any attempt is made to assess its effectiveness.

We can never expect to reach the degree of perfection that an industrial organization can achieve in turning out a finished product. However, through continuous planning and study, we can hope to approach a desirable level of competence in effecting and measuring behavioral changes in people. Too, it should be recognized that organization is but one of several variables that will have to be considered in measuring behavioral changes in people.

Coordination of Research, Teaching and Extension, and Its Effect Upon Staffing, Program Development, and Execution

There are a number of factors that seem to be important to the overall development of Colleges of Agriculture and Home Economics. It is generally believed that close and effective coordination of research, teaching, and Extension is one of the important factors that is necessary for best results. Those who have studied the three functions have felt the need for closely coordinating research, teaching, and extension staffs in order to maximize their efforts and increase the effectiveness of land-grant institutions.

Several recent studies concerned with coordination in Colleges of Agriculture and Home Economics (Boone,13/ Hyatt,11/ Richert 14/) found that wide differences exist among the States in organization and administration of the research, teaching and extension functions. In addition to differences in organization and administration, there were considerable differences relative to the professional status of extension staff members as compared to research-teaching staff members among the different types of organization.

Greater coordination, in terms of program development and execution, existed in those institutions in which extension personnel were formally aligned with their department colleagues. While these findings reflect to a certain extent the values to be derived from closely coordinated Colleges of Agriculture and Home Economics, there is need for additional research to identify bases that will facilitate coordination of the three functions. There is also need for studies that will determine the impact of coordination of the three functions upon the effectiveness of planning, developing, executing, and evaluating programs of Colleges of Agriculture and Home Economics.

We need more detailed case studies that are focused on organizational arrangements and administrative policies of Colleges of Agriculture and Home Economics. These studies might include participant observations. Both formal and informal relationships need to be examined.

Organizing to Achieve Unity of Direction and Coordination of Extension Staff Effort at State, District, and County Levels

A unified program of extension education, as used, means that all of the work being done at the several levels of the organization is directly related to the problems of the people and, consequently, Extension's objectives. It encompasses the work of every member of the organization and includes all phases - agriculture, home economics, and youth work.

Certain assumptions are basic to this concept of a unified program of extension education. The first assumption is that the program is people-centered. Unlike an institutionally derived program, a people-centered program takes as a starting point and the basis of its program the problems of the people Extension hopes to educate.

A second assumption is that the various parts of the extension program are contributing to broad basic purposes, with each worker, each objective, and each activity in some degree contributing to the ultimate or broad objectives of Extension.

The third assumption is that cooperative staff planning and coordinated staff effort are essential to implementing a unified extension program of education.

The research findings available (Dunlap,3/ Creech,2/ Browne,7/ Earle,5/ Ratchford,15/ Collings,16/ Carter,12/ Trent,17/ and possibly others) imply that the organizations of the several Extension Services studied tend to promote and nurture compartmentalization of extension programs. They tend to emphasize specific program ends rather than problems of people in general. While organizations cannot be singled out as the exclusive factor which determines whether or not a program will be integrated, there is reason to believe that it has a bearing on how individual staff members view their responsibilities and their relationships with other staff members within the context of the objectives of the Extension Service. From the limited evidence available, it appears that extension organizations may not be in harmony with the expressed philosophy of many extension leaders.

Several questions for which answers are needed by administrators before they can make decisions about organization include: "What is the best organizational structure for my State?" "Can the organization use different bases within the structure?" "What are the consequences of shifting from one base to another?"

Achieving Flexibility in the Extension Organization

One of the challenges confronting social institutions at the present time is how to be sensitive to the changing, complex needs of constituents, yet coordinate increasingly complicated organizations so that the needs and problems of constituents can be meaningfully related to the resources available within the institutional framework. No organization can long remain static. Changes in basic objectives, size of staff and professional competency, adjustments in program emphasis and the nature of institutional relationships within which organization must operate, and needs for long-range as well as short-range planning of programs, personnel and finances, may require many adjustments in the form of the administrative organizational structure.

The findings of several recent studies (Dunlap,3/ Creech,2/ Earle,5/ Browne,7/ Durfee,18/ Collings,16/ and others) indicate that no major changes in organizational structures have been made during the past few years despite the fact that the size of staffs has practically doubled during this period. Generally functions at the State and county levels have been strengthened or expanded by adding new personnel to existing units without altering the original organizational structure. For example, it was revealed in one study that, while marketing personnel had been assigned to counties, the problems with which they were concerned often extended beyond county boundaries.

If Extension Services are to remain sensitive to the nature and scope of problems confronting their clientele, they need answers to such questions as: "What are the bases for determining whether changes are needed in an organization?" "How can needed adjustments be made in an organization?" "How can the effectiveness of changes in an organization be measured?"

Analyzing the Relationship of Cooperative Extension to General Extension, and Determining the Bases Upon Which Consideration Should Be Given to Coordination of the Two Services in the State's Higher Education System

Land-grant college and university officials are giving important consideration to their two Extension Services. Several States recently have combined their Extension Services, and others are contemplating the move. Plans for conducting major research in this field are being developed by a special committee appointed by the American Association of Land-Grant Colleges and State Universities. Two States (Wisconsin and New Jersey) have received extensive grants for purposes of developing pilot projects that would encompass both the Cooperative Extension and General Extension Services.

To the writer's knowledge, no extensive research has been conducted on problems concerning the need for coordinating and integrating the two Extension Services. One study (Frischknecht 4/) has been made. However, it consisted primarily of a survey of land-grant college officials in several States, and did not attempt to assess the adequacy of the two Extension Services for servicing the needs of people in the respective States studied. One study currently is underway (Ferver 31/) which is designed to explore one of the problems concerned with coordinating the two Services at the field level.

Before informed judgments about coordinating or integrating the two Services can be made, it is necessary that the following questions be answered:

1. What are the nature and scope of problems and concerns confronting the people?
2. What are the objectives of the Land-Grant Institution in providing off-campus services, and whom do they perceive as their clientele?
3. What type of administrative organizational arrangement in the Land-Grant Institution would be most effective in maximizing off-campus services?
4. What knowledge and experience do we have to draw on for dealing with problems of organizational structure and personnel relationships that are certain to emerge in the course of shifting to the more complex system?
5. How can local representatives in a coordinated (integrated) program maintain their close contact with their source of information (research)?

Administrative Role of State Directors of Cooperative Extension in Relation to Generally Recognized Components of Administration, Such as Decision Making, Planning, Organizing, Communicating, Influencing, Coordinating, and Evaluating, and the Relation of Other Staff Members' Administrative Roles to the Director

What is the role of the State Director of Extension, and to what extent is the Director's role comprised of the major components of administration as identified by Gregg 19/ and others? What is the relationship of other staff member administrative roles to that of the Director? Should the focus of the Director's energy be on administrative management or educational leadership? These key questions suggest that it might be highly desirable to study the job of the Extension Director and other administrative staff members to determine how the functions they actually perform relate to the several components of administration.

Decision making is considered by many to be the very heart of administration. Decision making connotes self-conscious, deliberate choice of one alternative from two or more, arrived at essentially through the steps of problem solving. Gregg 19/

and others maintain that staff participation in policy decisions means sharing in decision making, not delegation of decision making.

Major concerns in this area are determining the processes for arriving at decisions within the Extension Service and identifying the roles assumed by the various staff members in the decision-making process. Similar studies along the same lines might be conducted relating to the components of administration, other than decision making, as they relate to roles of extension administrative staff members.

Carter [12] and others have developed, from the literature, research frameworks for studying positions within an administrative organization. These and other studies might well be used as a frame of reference for studying and analyzing administrative positions within the Extension Service. For instance, Evans [20] has developed a theoretical frame of reference, relating to administrative management versus educational leadership, which might also serve as the focus for a study in this area.

Determining the Bases for Recruiting, Employing, Training, and Evaluating Staff

What are the bases for recruiting, employing, training, and evaluating extension personnel? These functions are directly related to the organizational effectiveness of the Cooperative Extension Service. The manner in which the functions are performed is governed to a large degree by the policies, procedures, and practices developed and agreed upon by administration.

Scientifically derived information is needed by extension administration for making decisions about the general personnel program. Sound policies, procedures, and practices need to be developed that will facilitate the employment of persons who have the necessary qualifications to fill adequately the positions for which they are selected, and who have the potential to assume additional responsibilities in the organization. Another major need is to develop and implement a training program designed to increase staff efficiency and job satisfaction. The continued growth and development of each extension staff member will depend to a large degree on the methods utilized in systematically evaluating his job performance, and in making constructive use of the findings of each evaluation.

Several studies (Smith,[10] Axinn,[8] Browne,[7] Anderson,[21] King,[22] Price,[23] McCormick,[24] VandeBerg,[25] Broadbent,[26] Ranta,[27] Bybee,[28] Cook,[29] and possibly others) have probed various phases of the extension personnel program. Valuable insights into the policies, procedures, and practices related to recruiting, employing, training, and evaluating personnel have been obtained through these studies.

Changes in administrative organization which directly affect personnel functions, as well as changes in the nature and scope of problems confronting Extension's constituents, make it doubly important that scientific, factual information be obtained as a basis for strengthening the personnel program.

The need for studies of the "super-structure" in relationship to how it can most effectively facilitate operations of an effective educational nature at the loca level might insure focus at the proper point (program).

Research Needs in Informal Organization

At the beginning of this paper, Dr. Boone delineated our responsibility in today's presentation. He set forth some brief definitions and interpretations of the concepts of both formal and informal organization, and developed in detail some of the research needs in formal organization. My purpose at this time is to (1) give further interpretations of the relationship of formal to informal organization in the Cooperative Extension Service and (2) describe some of the areas of needed research in informal organization.

It has been pointed out that an informal organization and informal relationships are present and functioning in any formal organization. It is a system of interpersonal relationships which form to affect or influence decisions made in the formal organization. This informal system usually is omitted from the formal scheme. Furthermore, this set of interpersonal, informal relationships is not spelled out as part of the operating functions of the organization.

While interpreting the informal relationships present in the Cooperative Extension Service, we should point out some of the forms in which they are manifest. The workings of an informal organization and of informal relationships is evidenced in a number of ways in the Cooperative Extension Service. It is that system of communication through which people associate informally with one another on a day-to-day basis, not necessarily related to carrying out their official job functions.

As among other people, these nebulous relationships materialize by the hundreds among extension personnel - around the coffee tables, in the car pools, and elsewhere - due to mutual interests in collegiate or professional sports, deer hunting, or what have you, often across departmental lines, or on the basis of similar age, position, or family responsibilities. While these unstructured, informal, interpersonel relationships do not necessarily relate to the formal or stated job responsibilities of the personnel involved, much interchange of ideas and sharing of possible solutions to everyday job problems do take place because of them. In fact, they provide the setting in which many formal extension administration decisions are made.

Other important evidences of informal organization are seen in the system of committee work that undergirds many extension decisions. Word of mouth counsel, gossip, grapevine communication, who visits whom, who avoids whom, the tone of voice, and how people act when they meet each other are all evidences that informal contacts do influence the operation of the Extension Service.

The informal organization grows from interpersonal relationships of people in the formal organization, and develops a structure of personalities rather than authority or functions. Informal groups often are created as a consequence of the frequent contacts which the members make with one another in and out of the organization. Growing out of these informal associations, for which we in Extension are not unique, are our attitudes toward one another and the program, our beliefs about the philosophy and objectives of extension work, and our modes of behavior which characterize us as members. These, in turn, help develop common points of view about program issues.

The limits of cooperation (which is an interpersonal relationship) are determined far more by the informal than by the formal organization. Cooperation is not primarily a result of formal organization but rather of social codes, conventions,

and modes of behavior, all of which are intangible characteristics of informal organization.

The nature of the interpersonal relationship in an organization is a crucial factor with which the administrative process has to deal. Consideration of the human problem in the Cooperative Extension Service points to at least two approaches which deserve attention in developing a good organization. One is the development of a communication system which will allow employees not only to learn about their duties and responsibilities but also to express their feelings and wishes about purposes, plans, and methods of work. Another is the development of an organization which tends to make it possible for employees to satisfy their personal needs while making effective contributions to organizational objectives.

Consensus from study and experience is conclusive that, where friendly approaches are made, where the importance of group goals is made clear, where group pride is built up, where the leader has a personal concern for each member of his group, the resulting group behavior will be productive to an optimum degree.

It is generally felt that, in order for the total extension organization to approach maximum achievement, both the formal and informal organizations must perceive the task of the organization as being the same for both. If the informal organization is in harmony with the purposes and program of the formal organization, it can be a very important asset. This is because the informal organization facilitates communication, provides for the cohesiveness of the group, and fosters on the part of the members a feeling of integrity and respect. On the other hand, if the formal organization is not in harmony with the formal one, the latter will be handicapped if not entirely incapacitated.

There is a limited amount of extension research evidence available on the nature of this relationship. Studies by Creech,[2] Dunlap,[3] Ratchford,[15] and others reveal that the existence of both formal and informal organization was recognized in the several States studied. The informal organization consisted of roles, sentiments and tradition that were not always specifically recognized as part of the formal organization. Although administrators in the several States were conscious of the informal organization, they appeared to utilize the informal organization only to a small degree in accomplishing extension objectives.

There is need to determine the degree to which formal and informal organizations have similar perceptions of the task of organization, and to identify those factors which give rise to possible differences in perception of tasks confronting the Extension Service.

Identifying and Analyzing the Bases for Utilizing Administrative Conditions in Developing Informal Organization

The formal structure of an organization is usually fairly definitely specified. The resources and personnel are organized in whatever order the administrator feels will accomplish the organization's objectives and the personnel have a knowledge of their job responsibilities. However, the functioning of the formal organization is dependent upon certain informal interpersonal relationships in the organization that are not specified in the formal structure, are omitted from it, or are not consistent with the formal specifications. It would be fair to say that no formal organization will operate effectively without an accompanying informal organization.

It is assumed that every administrator draws on the informal relationships within his organization to determine and implement policy. Such sources as informal counseling with staff members, a system of informal committees, and popular opinion of personnel are all bases for administrative decision making.

A number of unanswered questions about these relationships suggest areas of needed research in informal organization. One that occurs immediately is "What conditions are provided by the administrator to best utilize and develop the informal organization?" It is necessary for favorable conditions to be established and maintained in order for desirable informal relationships to develop.

Lines of communication among all staff personnel must be streamlined and kept open. This suggests another researchable question: "What are the lines of communication on which the director of an organization can depend for reliable help with decision making?" A system of committees must be maintained and an atmosphere, wherein free exchange of ideas is possible, must exist. "What is the role of informal groups in assisting administration with decision making?" "What decisions can best be made with the help of informal groups?"

To study these conditions, to determine their nature, and to provide a permissive atmosphere within which the informal organization can grow, is indeed an area that needs continued research and analysis.

All writers on administration devote considerable attention to describing the place of informal relationships in administrative matters. Some research has been completed which bears directly on the significance of informal organization in the Cooperative Extension Service. At least two of these offer findings which have implications for Extension. One is by Ernest Dale 32/ in which he explores two questions:

1. What are the factors to consider in the use of committees in administration?
2. What arrangements should be made to avoid procedural difficulties in using committees?

A second study, by Davis 33/ of Harvard, investigates the question: "What is the place of the grapevine in communication of information and how does it function?"

Administrative Factors in Cooperative Extension Influencing Informal Organization

Informal organizations are present in every formal organization. This is the system of interpersonal relations which forms to affect decisions made in the formal organization. The informal organization is a dynamic structure composed of changing relationships depending on the nature and direction of the formal organization. The informal structure is subjected to continual revision as new decisions are made in the formal organization.

Authorities on extension administration recognize several factors which affect organizational structure. It is of concern at this point to acknowledge the effect these administrative factors have upon the informal structure, as well as the formal structure, and their interrelationships. A critical analysis of certain identifiable administrative factors and the nature of their relationships to the formal

structure and functioning of Cooperative Extension is of ongoing and continued interest to administrators. Likewise, the influence of certain factors in the formal organization on the development of the informal structure is vital to the development of these interpersonal relationships. A question that is worthy of research in this area is "What is the influence of selected factors in the administration of extension work on the development of the informal organization?"

Clark and Evans 1/ set forth six factors affecting extension organizational structures: (1) Size of staff, (2) personnel growth, (3) needs in clientele, (4) predominant basis of organization, (5) changes in objectives of the organization, and (6) bases of authority available to members of the organization. "How do these factors and the changes in these factors influence the informal relationships developed within the extension organization?" Another significant research question is "What happens to the informal relationships among the personnel of the Extension Service when changes in objectives are brought about through the development of a scope report in a State?"

At least one known study attempts to explore factors that contribute to good teamwork in a formal organization. This is by W. E. Bakke 34/ based on materials from the Midwest Administration Center at the University of Chicago. In this study, it is pointed out that an organization can be viewed as a "small society." As such, it contains both formal and informal relationships which make up certain "bonds of organization." These bonds which contribute to the organization's effectiveness are (1) functional specifications (job description) which bind people together as partners in production, (2) a status system which welds men together as directors and directed, (3) communication systems which encompass both givers and receivers of information, (4) a reward and penalty system, and (5) the organizational charter which ties people together as sharers of a conception of the organization as a whole.

The Effects of Informal Organization on Interpreting and Implementing Formal Administrative Policy

When formal policy statements are issued by the administrator, they usually come after much effort by the administrative staff and associates and many hours of weighing consequences and anticipating implementations. Nevertheless, when the rest of the staff of the extension organization receive these policy statements through formal channels, they usually do not accept them without question and follow them on blind faith. Much interpretation, discussion, and conjecturing of consequences first must take place. In other words, the informal relationships among different individuals and small groups go into operation, and informal interpretations are made of the policies before implementation takes place.

At this point, one specific question can be posed that is worthy of research effort: "What are the factors in primary group relationships that speed up or impede interpretation and implementation of formal administrative policy?"

Dubin 35/ points out that primary group sanctions and formal (organization) sanctions in most cases move in the same direction, reinforcing one another in ways which present research techniques and conceptual schemes do not allow us easily to disentangle from one another. One important general function of the existence of formal sanctions is that, when imposed, they call the informal sanctions, both social and internalized, into automatic operation. The existence of these informal sanctions gives the formal sanction much of its force.

Primary group solidarity functions within the formal organization to strengthen motivation for the fulfillment of prescriptions and commands issued by official agents of the formal organization.

Democratic, permissive approaches and open networks of communication are informal factors that influence the acceptance and implementation of policy in the Cooperative Extension Service. In our research, we need to identify more precisely those approaches and networks of communication that contribute to policy interpretation. "What is the nature and extent of the influence of selected factors on the interpretation and implementation of formal administrative policy?"

Results of studies of the behavior of people in both small groups and large organizations point up values in permissive approaches to leadership, and the value of an open network of communication. As communication patterns become rigid (or technically efficient), satisfaction of the group members declines. One of the major reasons is that each member feels he is being left out of the decision-making process.

Simon 36/ points out that attention must be given to the destination of communication as well as its source. The source of communication and the way it is presented will determine how much consideration its recipients will give it.

The Role of Informal Organizational Relationships in Major Formal Organizational Changes

Progressive administrators in all types of organizations are ever alert to the changes in their programs and to clientele conditions that might dictate major changes in organizational structure and function. As Boone pointed out in his definition, when major organizational revisions are made, it is an effort to more effectively focus resources on the major problems confronting the clientele of the organization. Whenever any major overhauling of the organization of Cooperative Extension takes place, it is usually in the formal organizational structure and is usually initiated as a top level administrative move. This act of realignment may or may not take into account the role and involvement of the ever-present informal relationships.

Major organizational changes may be decreed by administrative edict, but the implementation of such change must take place through the day-to-day working relationships and mutual agreement among staff members.

That a body of research knowledge is needed by any administrator before major organizational changes take place, is implied by the following question: "What is the makeup and function of the informal organization?" It is necessary to utilize the informal relationships in an organization in deciding what formal organizational changes to make. Therefore, "What roles can be performed by members of the informal organization to influence acceptance of major formal organizational changes?" A research-minded administrator might well raise the question, "What key leaders in the informal structure of the organization can determine the success of implementation of major organizational changes?"

Basic writings by Newman 37/ indicate that "where a closely knit informal group is present, an organizational change that upsets this group may cause considerable

dissatisfaction." In such situations, advantages of making the shift should be substantial and special efforts should be made to get the group to see why the change is necessary.

Ernest Dale [32] studied "the factors that should be considered in whether or not to reorganize." Some of the findings are presented here, especially those that point out deficiences in the informal organizational relationships.

1. Slowness in decision making
2. Frequent and serious errors in decision making
3. Inadequate communication
4. Decision making overly decentralized with consequent lack of uniformity in policies
5. Personality clashes
6. Inefficient committee work

The Role of Informal Organization in the Development of Job Descriptions and Personnel Evaluation

A key function in any organization is the clear-cut identification of the overall objectives of the organization. A logical attendant to this is the development of statements of job responsibility and the evaluation of personnel performance in specified jobs. The responsibility for setting the stage administratively for the implementation of these functions clearly belongs to the formally designated administrator. The processes and relationships involved in developing both the statements of job responsibility and the evaluation of personnel performance are functions of informal organization.

To develop acceptable written job descriptions that can be used as a basis for performance, the staff members occupying these positions must have a key role in their development. Experience has taught us that job descriptions developed by one level of organization and submitted to another for performance is not desirable. The process of developing job descriptions utilizes the informal relationships of an organization by involving all personnel in identifying job criteria, personnel qualifications, and specific functions of the position.

Evaluation of personnel as a function of formal organization does not go far enough. Evaluation of personnel performance, in order to be acceptable, must involve at every stage those being evaluated. If the informal relationships are utilized in arriving at the basis for evaluation and for involving staff in developing the instruments of evaluation and how they are to be used for implementing the evaluation process, then the chances are good that findings will be accepted and used.

While these two areas should be considered as distinct and exclusive in their own right, the research needs relating to the informal relationships of the two, have much in common. Here are several basic research questions relating to developing job descriptions and personnel evaluation that are worthy of consideration:

1. What is the role of the informal organization in identifying statements of job responsibility and personnel evaluation?
2. How can formal and informal relationships be coordinated to implement these functions?

3. What is the process that takes place in establishing conditions for, and involving the staff in, developing job descriptions and personnel evaluation?

The Personal and Social Characteristics of Closely Knit Informal Groups in Cooperative Extension's Formal Organization

It has already been quite clearly pointed out that informal organizations operate to affect decisions and functions of the formal organization. Due to the nature of the functioning of the Cooperative Extension Service, wherein flexibility and permissiveness are so necessary to effective operation, it is assumed that informal interpersonal relationships play a significant part in the decision-making process of the Extension Service. It is therefore apparent that a knowledge of the make-up, functioning, and process of informal relationships is necessary if informal groupings are to be utilized in the administration of the Cooperative Extension Service.

Through systematic observation and study techniques, it is possible to identify informal groups and relationships among extension personnel. The strength of closely knit informal groups is seen in the cliques, informal committees, interest groups, agent and specialist groupings, tenure groupings, district or geographic groupings, etc. A director needs to know the nature and functioning of such groupings in order to utilize these relationships in the administrative process. For example, to know such characteristics would place a director in an advantageous spot in appointing committees, selecting personnel to fill specialist and supervisory positions, and instigating revisions in program approaches, such as project agreements, job descriptions, etc.

Several researchable questions in this area come to mind:

1. What identifiable informal groups exist within the formal structure of the Extension Service?
2. What social and personal characteristics differentiate these groupings of people?
3. What is the nature of their strengths and how do they influence decision making?
4. What changes take place, and how do they take place, in the structure of such groups?

Much evidence is available on both the nature and functioning of informal groups and the research methodology used for informal group investigations. The fields of sociology and psychology have much to offer in this matter. The application of this body of knowledge to Extension could be accomplished by some of the following ways:

1. Synthesize from existing literature that which is now known about informal groups.
2. Make application of established theory, principles, and practices to the operation of extension work.
3. Plan and conduct research in Cooperative Extension, using proven research techniques from already developed disciplines.

RESEARCH METHODS

No discussion of research needs in organization would be complete without considering some of the difficulties that will be encountered in planning, designing and conducting research on problems of administrative organization.

The study of cooperative extension administration is a new field. There has been no large accumulation of factual material concerning it. Good theoretical formulations must be based upon a considerable body of fact. Hence, it seems essential at the outset that some of our research will have to be of an exploratory nature.

In essence, exploratory descriptive research will have to precede experimental research. Once insight has been obtained through exploratory research, it will be possible to follow through with rigorous testing of hypotheses and other techniques of experimental research. Some problems will lend themselves to exploratory descriptive research; others will have to be approached through formally tested hypotheses and carefully constructed experimental research designs.

This exploratory approach is good, not bad. We have a tendency to think that, because rigorous experimentation and quantitative measurement have acquired high prestige in the physical sciences, that they are the only legitimate tools of social science research. However, much as workers in the well developed sciences do when working in a relatively undeveloped area within their field, we in the field of human relations research must place heavy reliance on observation and accurate description of behavioral events.

One needs only to examine research findings in cultural anthropology to appreciate the contributions (values) that can be obtained through observation and description of behabioral situations. Brunner 30/ and others, in discussing research in adult education, support the idea that there is need for massing extensive descriptive information about the various adult education programs before a concerted attempt can be made to design and conduct experimental research in those fields.

Thus, it seems reasonable to conclude that research in extension administrative organization will also continue to be of an exploratory nature until a considerable body of facts has been accumulated. Even then, it must be recognized that the act of conducting a study of human behavior, in itself, alters human behavior. Hence, one can never go back and observe the organization as it existed prior to the study.

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NEEDED RESEARCH ON EXTENSION AS AN ORGANIZATION AS SEEN BY AN EXTENSION ADMINISTRATOR

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I am very happy that one session of this National Extension Research Conference is devoted to the exploration of needed research on Extension as an organization. It does seem to me a bit paradoxical that an organization so dependent on research for its program content would not have sought earlier and more vigorously for assistance through research on its very organization.

In recent years, various individuals and groups have given attention to different problems needing research on Extension as an organization. In this connection, all of you, I'm sure, are acquainted with the Green Lake Conference in 1956, the several administrators' workshops in the last decade, and the efforts and leadership of the staff at the National Agricultural Extension Center for Advanced Study. Today's paper by Drs. Boone and Duncan is another forward step in systematizing the problems needing research on the formal and informal structure of Extension as an organization.

There are numerous and compelling reasons for examining these kinds of problems. Since all of you have some understanding of Extension, I will only enumerate some of the reasons why I believe it is important to do this. You can identify others, I'm sure.

1. The rapid growth of the extension staff (over 50 percent increase) since World War II.
2. The changes in program orientation - scope, content, clientele, method.
3. The complexities surrounding the farm and family, the county, and our society in the space age.
4. The aroused interest by all people in education and the opportunities for education in meeting problems of our modern day.

From my point of view, research on Extension as an organization has a practical and immediate importance. This is to be able to provide a system and structure which will permit us to carry out our responsibilities more efficiently and more effectively. In one sense this may be a selfish viewpoint; on the other hand, since we do have a public trust and responsibility, it seems to me important that we institute proven and effective changes in our organization at the same time that we are making similar recommendations for our clientele. I have never understood why, as agents of change, we seem reticent to make this application to our own organization.

In my role today, I will attempt to identify what I consider to be significant problem areas needing research. I know that I cannot speak for all extension administrators regarding the completeness or the relative importance of the problems that I will identify. I offer them to you for what they are worth - admittedly lacking in the logic and order offered by Boone and Duncan in their fine paper.

1. The Image of Extension

What is the image of the Cooperative Extension Service as an educational arm of the U. S. Department of Agriculture - or as a functional part of a particular College or University? Certainly this is important, for this image is likely to fix our opportunities in programing, in staffing, in growth.

What do we in Extension conceive this image to be? What do we want it to be? What should it be? Some research on corporations indicates that the number one factor of the image held by people was that provided by the employees. Does this have application to Extension? If so, this has tremendous significance in our training program.

The second most important factor of the corporate image was the product - the refrigerator, the electric razor - how it operates and how it performs. The product of Extension is education, an image that, undoubtedly, has more difficulty coming through. "Helping people help themselves" is a very important philosophy, but the image from this may be a bit nebulous. I submit, however, that it is increasingly important that we know what the gaps are between what we would like as an image and what actually exists in the minds of our clientele, our leaders, farm organizations, legislators, business sectors, cooperatives and, equally or more important, the image held by county and State Extension staffs, University faculties, Land-Grant Institution Presidents and Administrators, and Boards of Regents.

My own experience in attempting to reflect Extension's mission and accomplishments to the various publics, including legislators, suggests that we need the benefit of a great deal of research in this area.

2. Qualitative Appraisal of Extension's Program - or Accomplishments

Extension reports for many years have been filled with statistics on number of meetings held, miles traveled, farms and homes visited, demonstrations established, bulletins distributed, office visits received, and telephone calls made or received. I have no quarrel with this information, as statistics. However, these statistics do not describe the role of the staff worker or the changes accomplished through his efforts. The unanswered question is what have these activities done for the people involved?

I admit that it is indeed difficult to measure changes in goals or attitudes, or to quantify the social changes in a community. Through some research in farm and home development we are getting at some of these problems, including the appraisal of economic progress made by the participating families. Certainly we must look to those of you in research to provide the tools to quantify these kinds of outcomes of extension education.

Project agreements, plans of work and annual reports are now being revised in every State. All of us are concerned about making these documents more meaningful and useful. In this connection, qualitative appraisal in our reports is of particular concern. Is it possible to institute or initiate some trials before we become wedded to a different - but not necessarily more useful - routine of statistics? Can we build into this a continuous appraisal system that would improve reporting - with flexibility - and reflect quality in changing programs?

3. County Unit Orientation

For half a century the focal point of our educational effort in Extension has been around a geographical unit, the county. Staffing, program planning, specialist staff assistance, and financing have had a "court house" orientation. Considering today's communication and transportation advantages and the "cost versus services rendered" proposition, should we not raise the question regarding the appropriateness of this size of unit?

Should we be working in larger than county units? Can several county units be operated as one? Can some combination of county offices and area specialist staffs meet the needs? What about the leadership problems when we move away from county orientation? Are there important educational problems or opportunities in fixed geographic boundaries? The direction of school reorganization is clear - however painful. What is the appropriate size unit - for staffing, for programing - in Extension?

We need answers in this area before we are forced into different units. More than that, I believe, if we had some of these answers we could be in a position of leadership on a problem that faces many counties, including county governments, in the United States.

4. How Do We Achieve the Most Appropriate Program at the Operating Unit Level?

Everyone will recognize this as a pretty complex kind of problem, yet one that is significant and real. The program planning process may be an important factor. However, my concern here lies more in the nature of the organizational structure and its effect on the ultimate program. At one end of the system there exists the authority of the State office with its staff of specialists who view the problems of the county in the light of their particular training and experience. At the other end, there is the autonomy and authority of the county unit whose leadership, by law, has certain definite and specific responsibilities and authority.

This provides the possibility of placing county staffs in a position of operating under conflicting authority structures. I believe you sociologists call it "role conflict." Because of their awareness of the local scene, they may see problems and needs in a different light than the State staff will. Fortunately, in our operating experiences, these authorities operate in a reasonably democratic manner. Nevertheless, the question remains, how does one get an appropriate program mix? Is it, or should it be, a blend?

This brings into focus the role of the county staff in program planning. Next, what is the specialist role, the district supervisor role? What can they - what should they - contribute to this program? Finally, what is the role of the county staff in dealing with each of these county and State authorities?

A related problem is the appropriate role of county committees, or councils, at the operating level. As I learn more from other States, there is a wide range of responsibilities and authorities delegated by law to these groups. What role should they play?

Do they now have responsibilities and authorities which restrict or limit existing educational objectives?

5. The Use of Staff Personnel by Extension Administration

If one assumes that educational leadership is an increasingly important role for Extension Administrators, there follows the question of how this leadership might actually be implemented. Historically, little provision has been made for strengthening the operating hand of the administrators in Extension. Somehow the philosophy has existed that any additional people around the administrator's office contributes to high administrative costs. Often the result has been some high priced bookkeeping and clerical help in the form of the administrator - and not very much program leadership.

What types and forms of staff functions should be provided in today's extension organization? What types of specialties should be provided? What are some of the input-output relations?

In recent years more "staff" resources have been added in many States - but I'm certain research could provide us with some important guidelines here.

6. Service-Education Relationship

There is an expressed need for clarifying and defining the most appropriate relationship between service and educational functions of the Cooperative Extension Service. Extension administrators are confronted with increasing demands on staff resources and physical facilities to provide special kinds of service. Usually these services are not provided from private facilities. They have grown out of ideas, proposals or recommendations from our own staffs, special interest groups, county extension councils and even legislative action. You are familiar with some of these: Soil testing laboratories, seed testing laboratories, boar testing stations, bull testing stations, one of the oldest - Dairy Herd Improvement Association, and many others offering varying degrees of services.

Performing some services may open the door for substantial educational activity, or provide a needed supporting base for a period of time. However, my experience leads me to believe that it is exceedingly difficult for Extension to discontinue a service once established. Even raising questions about its usefulness in education is likely to bring a storm of protests. This causes me to wonder if the "service"role does not have a stronger support base than the "education" one.

With our given educational objective, can we develop some guidelines for the appropriate relationship of education and service? Who should bear the costs of the services rendered? To what degree should our professional staff be involved in administering and conducting service facilities? Can we establish criteria for a periodic reappraisal of their usefulness?

Summary

The above six research areas, I hope, will serve to identify what I believe are research opportunities that concern some extension administrators. I'm sure that you can state the problems more precisely and can place them in a more researchable framework.

We are very much interested in what you, the extension research workers, are doing. We are grateful for your leadership and for the quality of your work. It is

my hope that, as we pursue opportunities on a national basis, we can somehow, through joint planning and/or a division of labor, allocate our scarce research resources among the many research problems we face.

Our's is not a task of piling up knowledge for knowledge's sake. We have immediate needs which can be met, following the testing of hypotheses, through careful and critical analysis and evaluation. I am certain that, out of these efforts, Extension, as an organization, will be better prepared for the responsibilities ahead.

SOME THEORIES AND PROBLEMS OF ORGANIZATIONAL RESEARCH

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Like much of contemporary social science, organizational analysis began in a context of immediate problems. Concern with increasing productivity, introducing innovation in work situations, ameliorating conflict between decisional units, and similar matters began to demand answers. Organizational theory grew up, not because we had answers, but because somebody had problems. Such a beginning is by no means pernicious, however; continual tampering with the nature of things is formally similar to experiment. We learn real things about the "real world," but we only know what we have learned if we carefully evaluate the consequences of our efforts. This is not so common as efforts at solution per se. Thus a great deal of the work done so far is highly specific - case studies of particular organizational situations and problems - and is only generalizable with some systematic intellectual effort.

The general nature of organizational theory is, then, that of a summary. If we can factor through various special approaches and problems, and emerge with a parsimonious conceptual scheme which is evident in them all, we may avoid "reinventing the bicycle" in perpetuity. To aid in discussing organizational theory I would like to break it into three levels: (1) The pure theory of organization - a study of the socially determinate human machine; (2) the administrative science approach, primarily concerned with the manipulable and manageable aspects of the human machine; and (3) the social change approach, concerned with the social relativity of various organizational forms.

Talcott Parsons, in The Social System, and George Homans in The Human Group exemplify the first approach. A multitude of authors, in fact the majority in the field, are concerned with the second. The last approach is evident in the work of Wilson and Wilson in Social Change, Shevky and Bell in Social Area Analysis, and Fred Cottrell in Energy and Society. In general, however, we know more about specific cases than about general theory, whether it is static analysis or dynamic.

Turning first to the pure theory of organization, we may summarize by saying it is the study of the "blueprint of the human social machine." Following my own approach, which is developed in Social Organization (Random House, 1955), I will emphasize three variables: Interdependence, flow of communication, and ordering of behavior.

Interdependence refers to the basis, in the internal order of the group and its relationship with its environment, for commitment of the population to the organizational structure. This is sometimes called function. I have talked in terms of two bases for interdependence: The social product, which is a basis of rewards (usually in the market place), and the social process, or interaction viewed as an end (or value) in and of itself.

Communication seems to me a continuous process in an organization, but much can be summarized in terms of the vocabulary of the group - the norms (agreed-upon rules for what should be done) and roles (the complex of rights and duties which defines one's relationships with others). Ordering of behavior I see as stemming

from the basic nature of dependence upon the group; sanctions, positive and negative, are ways of increasing and decreasing the individual's share in the social product or the social process. The former are "formal" sanctions, the latter "informal." In summary, I say, from an aggregate in a state of interdependence developes a flow of communication which results in the ordering of behavior. That moving structure is a human group, which is the basic unit of organizational analysis.

The administrative approach to organization maximizes the possibility of using organizational theory to manipulate behavior. In brief, it rests upon the assumptions that planned change in the rights and duties of men can be brought about through using the "blueprint of the human social machine," or the pure theory of organization. Those who work as administrative analysts are committed to the formal goals of the organization; they are problem oriented, and concerned with the nature of the social machine in a context of efficiency - that is, with the cost-benefit ratio as computed in a given calculus of values. In American business, these values are usually dollars.

Thus, within the givens - the constants - of organizational requirements, the administrative analyst will ask: How can I maximize the goods produced in relationship to their cost, through changing role system, communications network or semantics, the nature and execution of sanctions, etc.? The administrative analyst is a company man.

Thus, organizational research of this sort has definite limiting conditions. First, the administrative research is part of the overall organization and is, therefore, constrained by it. (For example - results are frequently never used. More often than not, results document decisions made independently of them - and so on.)

Second, the research person is symbolically involved in position. He is likely to be biased. (Some have been so unkind as to call him a "cow sociologist," who wishes to get milk from contented animals...David Riesman speaks of "mood engineering," a similar phenomenon.) In addition, his own role ascriptions are very apt to affect the nature of his information, and thus his research. People talk to him as a given man in a given position of power or powerlessness - not as an abstract actor. These limitations thus raise the general question: What are the conditions for, and the techniques for, planned innovation within an ongoing social system?

Here the social change approach is perhaps the most useful. It allows us to say, beginning at the beginning, all social organization is a human creation, a response to man's fate - because man depends upon the collective, and collective behavior demands order, thus organization. But, because organization is a human creation, wide variations are possible in the ways we order ourselves. Knowledge of the mechanics of order thus makes possible creative changes. (For example - the bases of interdependence may change, the role-systems available in the common culture change and, therefore, the kinds of sanctions that will work change.) These need not be seen as simple and inelectable directives from nature; at each point we have an opportunity to intervene.

Within limits, we control organizational responses to these changes. Insofar as we have adequate theoretical maps, we can spell out ways of allocating and

integrating activity, but our theoretical maps will limit and determine much of what we do. Peter Blau has pointed out the disadvantage of being limited by a conventional Weberian theory of bureaucracy which identifies the formally bureaucratic with the one best way. Instead, Blau demonstrates that variations in reward, control, and scoring systems within work groups can greatly improve or deteriorate the efficiency of the bureaucracy.

For this reason, an experimental, organic notion of change may be safest. Organizational research should begin with careful description, in forming our definitions of what indeed exists. It should carry us to a consideration of alternatives which spells out probable consequences. It should be followed by continual assessment and reassessment, as the nature of things answers our questions as to what will work. Such research would not determine organizational policy, but it would greatly augment the resources of the policy-making actors.

In summary, organizational theory can liberate us from blind compliance with organizational structures as they are. As we make explicit and clear the implicit and confused, we are liberated. But, research is also action, and some cautionaries are in order.

1. Any research finding will become an organization factor and will have a "subscript" indicating the role and interests of whoever is evaluating and using it within the organization.

2. Any organization is to some degree a polity - some values and goals are in conflict and hazard. Thus, the terms "efficiency" and "economy" must be carefully interpreted: Efficient in terms of what costs and benefits? Economical for whom, in what kind of dollars?

3. Finally, we must remember that only some categories of persons - some role incumbents - initiate research and use it. It is the intelligence tool of an elite. Union members look with a warrantable mistrust upon the time-study men.

SECTION III

FUNCTIONS OF EXTENSION RESEARCH

THE FUNCTION OF EXTENSION RESEARCH

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The concept that there needs to be considerable effort exerted in the area of extension research by Cooperative Extension Services throughout the United States has become more and more firmly adopted by extension administrators and extension workers in recent years. However, there still remains a somewhat "smoggy" atmosphere as to the specific function of extension research. It seems to me that there is no clear identification as to what extension research should do for the organization or what the Cooperative Extension Service should do to implement extension research. The other components of the Colleges of Agriculture and Home Economics in Land-Grant Universities (research and resident teaching) are perhaps even less agreed as to the need and function of extension research than is the Cooperative Extension Service.

Research in any form, much like motherhood and the flag, is something to which practically everyone gives at least favorable lip service. Sometimes, however, this is about the extent of the activity that is generated for extension research specifically, and I suspect in many cases it is tolerated rather than actively supported. One often gets the impression that the general feeling is that extension research really can't do any harm, although one visualizes that the individuals are saying in the same breath that there is really not much practical value that can come from this type of activity.

Much of the lethargy, if not downright hostility, that generates around the area of extension research seems to stem from the fact there is no clear understanding of what is meant by extension research. There is an even less clear understanding of what the function of extension research is or should be. One would be very naive, indeed, to believe that in this short paper it is possible to "burn off the fog" that has settled over the area of extension research. Rather, it would seem more reasonable for me to set forth for your discussion and consideration some propositions, as I see them, of possible functions of extension research.

Definition of Extension Research

Any attempt to define extension research would, of course, be arbitrary. Rather than lament the arbitrary nature of the definition, it seems to me more desirable to consider whether or not the definition is useful for the discussion that is to follow. Obviously, if one cannot "carve out" what is meant by extension research, he will have considerable difficulty trying to identify what the function of this research should be.

I choose to think of extension research in the research framework rather than in the more generalized term of evaluation. This is not to decry the use of

evaluation in Extension, which I think is most important and most necessary. However, if we think of the purpose of research as encompassing a procedure "to discover answers to meaningful questions through the application of scientific procedures"[1] this is somewhat different from evaluation.

It seems to me that research can, in fact, provide some basis for our evaluation, whereas evaluation is a more generalized term that really means the judgments we place upon the effectiveness of various activities and programs in relation to the objectives. Obviously, the concept extension evaluation includes many aspects of extension research. However, extension evaluation also includes many activities which give little consideration to the principles of the scientific method.

To state this another way, I visualize the term "research" as more nearly equated with measurement, rather than evaluation. We know that research doesn't tell us what we ought to do; rather, it tells us that if we do this we can expect these results. The if-then concept is central to research procedure. We form a judgment based on facts or alternatives to decide what we ought to do, and it is this process which I visualize as evaluation, or the human process of making a judgment.

The Major Function of Extension Research

The major function of extension research must be beamed at the program of the Cooperative Extension Service. The only reason for the existence of the Cooperative Extension Service is for the educational program that it can develop and conduct with the people in particular localities. Having made this statement, I recognize that this is not particularly definitive of the function of extension research. Obviously, there are many ramifications of the program of the Cooperative Extension Service if one considers the extension program to include all educational activities engaged in by extension workers. Extension workers at all levels need facts on which to base decisions relative to their part in the program of the Cooperative Extension Service. The major purpose, then, of extension research is to help extension personnel obtain and interpret facts.

A somewhat definite outline of the content areas related to this business of extension research in the areas of program has been developed by the research subcommittee of the Ohio Committee on Extension Research and Training.

Content Areas for Extension Research in Ohio

A. Program
   1. Development and content
   2. Method
   3. Leadership
   4. Clientele

B. Administration
   1. Personnel
      a. Administrative
      b. Supervisory
      c. Specialist
      d. County
   2. Organizations

1/ Marie Jahoda, Morton Deutch and Stewart W. Cook, Research Methods in Social Relations. New York: Dryden Press, 1952, p. 2.

This is a skeletal framework, but perhaps it will provide a useful device by which we can look at the function of extension research. The first major area is that of the program itself. As indicated above, Extension exists only for the purpose of conducting an educational program. It seems useful to conceive of this program as those activities of an educational nature engaged in by an individual as an employee of the Cooperative Extension Service.

The development and content of the program is our first major heading under extension program in the outline above. Let me say at the outset that we do not conceive of extension research as including research in the areas of technical subject matter. Rather, it includes the kinds of arrangements of subject-matter teaching that are used in the program. In addition, we are concerned with the processes involved in the development of the program. While there is a generally accepted rationale and theory of program development that is quite freely articulated by extension workers throughout the United States, many different approaches and many different degrees of understanding exist relative to the process of program development.

Extension research in this area is of a rather broad nature and would involve research at all different steps and phases in the process of program development. This would include the process of planning the program, the process of carrying out the program, and the process of measuring the results of the effectiveness of the program. In terms of the content of the program, extension research has a function to perform in identifying how applicable the content was for the needs of the clientele toward whom the program was directed.

Extension teaching methods is another general area in which we feel there is a real function for extension research. There are many excellent studies and pieces of literature in terms of the methodology that has been used and can be used by extension workers in the field of education. However, this field offers many opportunities for further experimentation and extension research. Under this area would fall such items as individual contacts, group methods, and mass media. Extension research on the farm and home development approach to extension teaching is a specific example of the individual approach. Extension research in radio and television is appropriate to the mass media area.

The area of leadership provides another major area in program development that offers excellent possibilities for further exploration. As an agency of adult education, the Cooperative Extension Service traditionally has made maximum use of lay leadership in developing and conducting programs. Much additional research is needed in the use of leadership and advisory committees in all phases of the cooperative extension program. It seems logical that this should be a function of extension research.

The last major area under program is extension research directed at the clientele. Much research has been conducted on the adoption of new practices. The composition and characteristics of the clientele of the Extension Service seem most appropriate areas, which make them important items for extension research.

In addition to extension research in the program development area, we in Ohio feel that there is need for extension research in the area of administration. Administration, in this sense, is used in a broad context and has to do with the administration of program as well as personnel. Extension research can be directed toward administrative, supervisory, specialist, and county level personnel. Much of the

research that has been done in this area has been done with regard to administrative and organizational relationships and in terms of training needed and training received by personnel at these various levels. There also is some research in the field in terms of personnel performance evaluation which seems pertinent to the total extension organization.

The above structure of extension research content areas is one approach, and I think it follows somewhat closely the categories listed by the Federal Extension Service in its "Review of Extension Research."2/ It provides a somewhat different arrangement which we in Ohio feel is useful to us for categorizing our extension research efforts.

Functions of Research at the Various Levels in the Extension Service

Sooner or later in a discussion of the function of extension research we must come to grips with the problem of who is to do extension research. Moving on from the concept of extension research on a broad level, I feel there are at least three major groups who have legitimate and essential functions in conducting extension research.

First, employees of the Extension Service in their role as extension workers have a function in conducting extension research. County staff members, specialists, supervisors, and administrators all have legitimate functions in conducting extension research. Their primary role, of course, is to provide facts that will help answer such questions as:

1. How well am I doing what I am trying to do?
2. What did I really accomplish?
3. Which methods are most effective?
4. Why are some methods more effective than others?
5. How can we improve our program planning activities the next time?

The above are illustrative of the kinds of questions for which the extension worker himself needs to try to find answers. Some of the areas of extension research now being worked by extension personnel themselves are:

1. Program Improvement Extension research has helped extension workers focus on the improvement of this process by having them take a critical look at how they can discover ways and means of improving their educational efforts.

2. Program Accomplishments Extension research helps us determine progress with activities. It allows us to identify the results of our educational efforts.

3. Information for the Public Extension research provides reliable, realistic, information for organizations, individuals, and professional groups in the community that need to be kept informed about the work of the Cooperative Extension Service and about the extension program.

2/ Darcie Byrn, "Review of Extension Research," Extension Service Circular 532, (Washington, D. C.: U. S. Federal Extension Service, 1960).

4. Knowledge of the Extension Worker Extension research gives us answers about our performance. It challenges us and those with whom we work. It supplies an index of how we are doing in our professional work. It provides us with information which gives us satisfaction and a feeling of accomplishment, or dissatisfaction and a determination to try harder. It also provides satisfaction - and dissatisfaction - to lay leaders and other staff members.

5. Needs and Interests of People Results and accomplishments of extension educational programs can be measured only in terms of the educational objectives on which the program is based. Extension research can identify the needs and interests on which objectives are based.

The second major group who have a contribution to make to extension research, as I see it in this broad context, are members of the research staff in the College of Agriculture and Home Economics or in the Agricultural Experiment Station. Obviously, the type of research conducted by these individuals will be of a more basic nature and will have more rigor in design and execution than that conducted as "action research" by extension workers in the field. Many words have been spoken about the competition between extension research and the experiment station type of research. It seems to me that these are in no way competitive, but complementary. Both are essential and desirable if Extension is to continue to grow and carry out effective programs.

It seems to me that one of the key functions of the person occupying the role of Leader of Extension Research in the extension organization is to serve as liaison among people doing research about Extension or research relevant to the Cooperative Extension Service. The action research conducted by extension workers in the field will, without a doubt, uncover areas needing basic research. This information can be transmitted to the research workers who can build it into major research projects that will contribute to the extension field.

Extension research that is incorporated into experiment station projects should be handled in just as sophisticated a fashion as other experiment station research. Ideally, appointment of a Leader of Extension Research on the experiment station staff would help facilitate this kind of research.

Any research that is suitably adopted to experiment station projects, and which demands rigorous treatment, should be handled by research personnel. Extension personnel should in no way attempt to usurp any of the prerogatives of the Experiment Station. In fact, the Extension Service can provide a laboratory for research workers. However, there are many areas in which answers are needed that are not legitimate experiment station projects. These offer fertile topics for the extension researcher to pursue.

From my own point of view, I would like to see much of this kind of basic research about Extension being conducted primarily by researchers in the fields of the "behavioral sciences." These would encompass such fields as education, economics, sociology, and psychology. Obviously, not all of these researchers will be in the College of Agriculture and Home Economics.

It seems to me that the Leader of Extension Research has an opportunity, and a responsibility, to make contact with eminently qualified research workers in other colleges and to keep them aware of the need for this research. Further, the Leader of Extension Research has a responsibility for providing the setting in which this

research about Extension in the basic fields, such as psychology and sociology can be conducted.

This person, undoubtedly, would not conduct this research himself, but he would provide the contact for seeing that this work was conducted. It has been my personal experience that people in fields outside the College of Agriculture and Home Economics are very much interested and very happy to find a setting in which they can conduct some of their research.

Finally, there is a function that accrues to the Leader of Extension Research position itself. It seems to me that there are many necessary and desirable studies which may not fit into established projects of the Experiment Station or other colleges yet deal with certain servicewide problems. Some of these deal with matters of supervisory or administrative procedures, or overall patterns of program, or specific methods, or results on the State level. Illustrative of these kinds of studies are two that we have been working with in Ohio during the past year, one on the role of the county extension agent chairman, and the other on the county extension advisory system throughout the State.

It seems to me that the person occupying the position of Leader of Extension Research must have an ongoing research program for which he is personally responsible. His projects may, in fact, be experiment station projects, and he may be conducting them as part of his experiment station research or in his role as an extension worker. To me, the discriminating factor would not be so much the content as the rigor demanded to secure adequate answers to the questions being raised.

The Concomitant Functions of Extension Research

Accompanying the "mainstream" functions of extension research are other areas that may in the long run have just as much impact on the Cooperative Extension Service as the central functions. In a general way these functions may be described as behavioral changes that are created in the participants by extension research. Education is concerned with changes in the behavior of individuals in terms of thinking, feeling, and actions. This suggests, then, that the process of involving extension workers in research activity can be, in and of itself, an educational activity.

We in the Ohio Extension Service have placed considerable emphasis upon this function during the past four or five years. In a real sense, we have concluded that one of the functions of extension research is training. Specifically, training in the scientific method has been one of our reasons for actively involving many county extension agents in special studies, field studies and action research. We feel this type of activity has several desirable outcomes, including:

1. It provides information at the local level that is useful in program development.
2. It provides specific training in the scientific method.
3. It creates appreciation and awareness of the value of research in general.
4. It helps agents interpret and understand research in the "behavioral sciences," as well as in their own technical agriculture and home economics subject-matter fields.

We would be the first to agree that many of these field studies lack sufficient rigor to qualify as highly scientific studies. However, they certainly provide a

valuable training ground for serious researchers and they provide information that is more nearly valid at the local level than hunches and judgments made without any attempt at scientific study would be.

Another concomitant function of the involvement of extension personnel in the research aspect has been the increased appreciation for the value of theory that it develops among extension workers. In general, it has been my feeling that extension workers place a high value on the "practical" and treat anything that "smacks" of theory as highly suspicious in nature. I am certain that professional extension workers need to be more concerned with knowing and understanding basic theory, or basic principles that have been developed in the various disciplines, than with continuing to build their catalog of specific bits of "practical" knowledge.

I am in no sense equating theory with some vague, nebulous dream that has not been tested. Unless theory can provide guidance for the county extension agent when he needs it, it is poor theory, indeed. Theory and problem-solving are inextricably intertwined. If we are serious about solving the problems of tomorrow or, in fact, of maintaining a strong, functioning Cooperative Extension Service, we have to be concerned with helping our staff members understand and appreciate the value of theory in their day-to-day operations. I contend that extension research, and the involvement of staff members in this research, contributes materially to this objective.

Function of Extension Research in Graduate Education

Extension workers and potential extension workers who are engaged in graduate student programs are becoming an increasingly powerful influence in the field of extension research. Whether we wish to admit it or not, these people serve as the work force for accomplishing a sizeable portion of the extension research that is completed. This work has been criticized, and perhaps justifiably so, as lacking in rigor. An even more pertinent criticism, in my opinion, is the fact that these studies are not additive in nature. Many master's theses explore small, isolated areas that cannot be added together realistically to provide a basis for adequate prediction.

In this respect, it seems to me that the person working in extension research needs to identify areas that are researchable, or can be divided into researchable units. It would then be possible for graduate students to take small sections of some major problem area and study them in depth. Then, if an overall theoretical framework has been established, these component parts of the problem can be added together into a substantial contribution to knowledge.

It seems to me that we have not progressed so far as we might in this direction In view of the fact that we can anticipate increasing numbers of our extension workers will be undertaking graduate study for advanced degrees, this area may well be one that should have our immediate attention.

Dissemination of extension research results is an important function that needs to be performed by someone in the Cooperative Extension Service. This function quite logically falls to the Leader of Extension Research. If this research information is to have its maximum impact upon extension workers in the field, it must be abstracted, digested, and disseminated in its most useable form.

This is not to contradict a previous statement that we need to create more appreciation for theory among our extension workers. Rather, this function contributes to an appreciation of theory. As the extension worker finds this extension research information valuable, he will want to probe further, and receive additional training in research methods.

Many satisfactory ways of disseminating information on extension research have been tried. The State newsletter is one that appeals to me. We in Ohio have incorporated a review of a research project by one of the supervisors into each monthly supervisory staff conference. The new Cooperative Extension Quarterly should be a helpful device for disseminating extension research.

In closing, I would say that the primary function of extension research - whether conducted by the Leader of Extension Research, county extension agents, researchers in the Experiment Station, or staff members in other colleges - must center on the identification of facts that will be useful in improving the extension program. This may be in terms of methods, program content, or organization for conducting the program.

As time goes on, I expect the need will grow for this research to become more and more scientific and rigorous. In the dynamic contemporary social setting, in which the Cooperative Extension Service must function, there will be an increasing need for extension research of this caliber to keep our extension program functioning on a basis of scientifically validated extension principles.

COMMENTS ON PAPER OF DR. ROBERT W. McCORMICK
OHIO STATE UNIVERSITY

Bennett S. White, Jr.
State Experiment Stations Division
Agricultural Research Service, U.S.D.A.

Notwithstanding the friendliness of this group, I confess to still having some trepidation in speaking even briefly on a subject which is undoubtedly of great importance but with which I am almost completely unfamiliar. Dr. Jehlik, of our division, has met with you briefly and regrets his inability to be present on this occasion. I am happy, however, to have had this opportunity to meet most of the group and become better acquainted with the problems and progress of extension research.

I propose to say comparatively little about Director McCormick's paper except to note that it is logical and well developed and to concur with his emphasis on the desirability of cooperation between the Extension Service and the Agricultural Experiment Stations in all cases where such cooperation may contribute to the productivity of effort. Also, I like his reference to the need to draw upon the skills of social scientists and others who may be located in Liberal Arts and other colleges on the campus.

During the past few years I have had an opportunity to work with three committees which advise the Department of Agriculture concerning the allocation of marketing funds to State agencies. These represent the Experiment Stations, the State Extension Services, and the State Departments of Agriculture. It has been gratifying to observe the extent to which the representatives of all three agencies recognize that there are many marketing problems which require the coordinated efforts of the three groups.

This point of view represents something of an evolution from an earlier one which placed major emphasis on marking out areas of responsibility within which each agency would operate and, hence, avoid any duplication or jurisdictional conflict. It seems to me that joint efforts to reach a common goal are much more constructive than agreement to keep out of one another's way.

No doubt it is expected that I should say something relative to the concern of the Experiment Stations with the entrance of Extension into the field of research. Before leaving the office I reviewed the minutes of the Experiment Station Committee on Organization and Policy for November 1958, April 1959, and November 1959.

The earliest of these contains a statement read by Dr. H. N. Young, Director of the Virginia Agricultural Experiment Station, in which it is pointed out that if the Extension Service is to keep abreast of new developments it must continuously evaluate the effectiveness of its program, procedures, and personnel in its own unique setting. It is stated further that, so far as feasible, extension research should be integrated with that of the Agricultural Experiment Stations by mutual agreement and that both Experiment Stations and Extension Services should be expected and urged to encourage, participate in, and support research activities of the kinds described. The research described is practically identical with that referred to in materials given to me by Joe Matthews and Fred Frutchey. This statement, read by Director Young to ESCOP, was presented at a joint meeting of ESCOP and ECOP.

In the minutes of ESCOP for both April and November 1959, it was reported that the Experiment Station Directors in all regions were unanimous in their opinion that there was no objection to the research activities which Federal Extension was conducting. However, they were also unanimous in their belief that the division of Federal Extension now known as "Extension Research and Training" should be given a new name which would not include the word "Research." It was suggested that the name "Division of Extension Evaluation and Training" might be a satisfactory substitute. All of this means to me that the official area of disagreement has been reduced largely to one of nomenclature.

Director McCormick mentioned that the more rigorous research in Extension should be done by or in close collaboration with the Experiment Stations. One gathers from the papers presented here, and from other evidence, that extension people are doing some rather careful work themselves and have a fruitful working relationships with the Experiment Stations. However, some of you may be contemplating more cooperative research, and at the risk of becoming somewhat pedagogical and perhaps pedestrian, I shall point out some of the things which you should have in mind in developing proposals.

I am thinking particularly of Federal-grant proposals, although the same standards really should apply irrespective of the source of funds employed. It is important to recall that it will be necessary to sell the Experiment Station Director and his staff on the project before it comes to our office in Washington. You might ask yourselves these question:1/

1. Have we formulated a real research project designed to test hypotheses, as distinguished from a routine survey or some kind of informal qualitative evaluation?
2. Is the proposal problem centered, and is the problem significant in the sense that the achievement of the objectives of the project will contribute to the making of decisions which are important?
3. Does the outline represent a carefully thought out proposal with a fully developed outline which can be understood and appreciated by Experiment Station Directors and other reviewers?
4. Do the research proposals cover a clearly defined, manageable, and researchable area? (One should beware of the shotgun treatment of all angles and phases at once, which probably means inadequate treatment of specific phases and no foreseeable termination date.)
5. Are there research workers in your own group or in the Experiment Station with the time and training necessary to carry forward the work, or are we expecting to load the job onto a person or persons already engaged in some kind of full-time assignment?

Other questions could be added to this list, but certainly these are some of the most important ones.

In closing, let me say that I would not wish to leave the impression that cooperation between research people in the Experiment Station and the Extension Service is a one-way proposition. Station research workers can do a great deal for

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1/ Adapted from Charles G. Grey, "The Case of the Missing Communications Research," 43d Annual Meeting of the American Association of Agricultural College Editors, University of Florida, Gainesville, Florida, July 15, 1959.

you, but you also can do a very great deal for them. I am well aware that in some States the working relationship between the two agencies is close and effective, but in others they leave much to be desired.

It is difficult for a group of research people to seminar for any length of time without someone voicing the lament that the results of research should be put to more effective use. Dean Butz spoke yesterday on the subject of "Taking Extension Research Off the Shelf," but he really addressed himself to the need to take the results of research in general off the shelf. If the Experiment Stations can assist you in making your programs more effective, it will help to justify their research programs.

More importantly, however, extension workers are in close contact with the tremendous changes which are taking place in the economy. There is no need to enumerate these, since we hear about them all the time. Programs in both research and extension must be reoriented accordingly. Both experiment station and extension programs reflect increased attention to the problems of consumers and marketing firms. So far, however, only a limited amount of work is underway in the broad area of socioeconomic adjustment.

Yesterday, Dr. Greer referred to the almost complete lack of preparation of millions of migrants from rural areas for nonfarm employment and life in an urban society. This is only one of the complex of socioeconomic problems which require attention. Others include rural-urban conflicts as cities and suburban developments spread into the countryside, creating problems in land and water use, education, transportation, and others.

The present emphasis on rural areas development reflects social concern for the sizeable number of rural people, farm and nonfarm, who lack adequate economic opportunity. Major farm products are in large supply, but considerable improvement in small-scale forestry will be necessary if timber products are to be adequate to meet the need of an expanding population. Demands for outdoor recreation facilities and space for nonfarm workers to live are rising to challenge food and fiber production for priority in the use of much of the country's land area. The Experiment Stations and the Extension Services possess a large proportion of the workers who have the expertese necessary to deal with the current and emerging problems in education and training, labor mobility, capital investment, land use planning, and integrated resource development occasioned by the above and related changes.

It is important that the Experiment Stations rise to the tremendous challenges and opportunities presented. It is important, as a matter of moral responsibility, to make a maximum contribution to social welfare. Also, it has survival value. Dr. Greer emphasized this aspect, pointing out that numbers of workers employed in agriculture have declined to where they equal approximately the number of permanently unemployed in the economy as a whole.

We must change the public image of both the Experiment Stations and the Extension Services from one of agencies directly serving farmers to one of agencies serving our entire rural economy and, to some extent, our urban society as well. Some of the stations are moving rapidly in this direction, but many of us believe that as a group, they should be reorienting research programs more rapidly. Extension workers can help them do this.

WHAT SHOULD BE EXPECTED OF EXTENSION RESEARCH

John S. Holik
Assistant Professor of Rural Sociology
University of Missouri

Dr. McCormick has just discussed the functions of extension research from the viewpoint of the Extension Service. This paper has been written from a research point of view.

Before we say anything specific about extension research, let us ask ourselves, "What do we expect from any and all scientific research efforts?" We expect a contribution to our fund of knowledge, a contribution which, immediately or at some future date, will help us improve our way of life. From this viewpoint, we would expect some contribution to our overall fund of knowledge from research of the Cooperative Extension Service. Thus, our question is in reality, "What kind of knowledge should we expect extension research to contribute?"

In order to answer this question, we must first examine what the Cooperative Extension Service does. Dr. McCormick has stated: "The only reason for the existence of the Cooperative Extension Service is for the educational program that it can develop and conduct with the people in particular localities" I would like to add another reason: "The Cooperative Extension Service has managed to survive because of the service it has performed for its clientele." This service has been the stimulating and motivating force behind, primarily, the rural people, as they have changed their behavior patterns in working toward the goal of deriving greater satisfaction out of life. In other words, the Cooperative Extension Service has been an action agency as well as an educational agency.

Dr. McCormick has indicated that we should expect these contributions in two major areas: (1) The extension program and (2) the organizational aspects of administering the program. (Here I have availed myself of poetic license in rephrasing his statement.) Dr. McCormick has elaborated upon the contributions that have accrued from previous extension research and also on the contributions we may expect from future research efforts. These contributions fall in the broad area of the behavioral or social sciences.

At this point, we should raise this question: "Why is it that the functions of extension research, as outlined by Dr. McCormick, as well as many other people, always seem to fall into the content area of research in the field of the social sciences?" The role of Extension, as stated in the opening remarks of this paper, is in the area of human behavior - the transfer of knowledge and its integration into the daily activities of people.

This is one reason, but there seems to be still another reason. The emphasis placed upon the content of cooperative extension education has changed. At the beginning, the Extension Service was expected to teach the farm population technical knowledge about the physical aspects of farming. Today, greater emphasis is being placed upon disseminating information on human behavior and upon stimulating human group action.

These changes have also changed the fund-of-knowledge needs of the Extension Service. Previously, these needs were in the areas of the physical sciences.

Within these areas these needs have been met as they arose. This was accomplished by delegating the responsibility for conducting needed research to the resident research staff. This is true, even in Ohio, where county experiment station farms are still in existence. If we are to achieve our expectations of meaningful contributions to our fund of knowledge of human behavior from scientific extension oriented research, we will have to follow the same procedures that have been used in developing the fund of knowledge of the physical aspects of farming.

Dr. McCormick states that the "Extension Service can provide a laboratory for research workers." I want to stress that we should expect this, and not just give lip service to the fact that it can be the laboratory for research in the areas of informal education and organized human group action. If the Extension Service will make this laboratory available to the "behavioral scientist," we should, and can, expect many contributions to our fund of knowledge of human behavior.

Related to the change in needs of knowledge by extension service personnel, has been their increased appearance in social science classes in our universities and colleges. Many of these people have been coming to these classes as graduate students seeking answers to problems they have encountered in their work. These students have raised stimulating questions for their instructors. They have been providing problems that the social scientists are incorporating into their research activities. Thus, we should expect an expansion of research activity in the behavioral sciences by resident research staffs using the Extension Service as a laboratory.

We should also expect that extension agents will receive more training in social science research methodology. This should result in increased experimentation by county extension staffs in conducting their extension programs. Furthermore, because of the training they are receiving, we should expect the use of more rigorous research methods by these agents in these activities. This will result in greater agent use of scientific methods for stimulating and implementing group action.

This will come about only if extension service administrators continue to recognize that the services of social science researchers are needed. The Extension Service can avail itself of these services by adding social scientists to its staff or by contracting for their services and making the extension program available to them as a research laboratory.

As this is done, we should expect to find the social scientist not only conducting extension research, but also directing extension personnel in research activities. As this expectation materializes, we should expect the degree of sophistication and the use of rigorous scientific research methods in extension research to be the same as in any other research effort. This is an expectation that should apply regardless of where and by whom the research is conducted. Thus, I do not entertain the notion that we should continue to accept lower levels in quality of extension research, merely because it was conducted by extension personnel at the county level.

The trend, evident throughout the extension program, toward greater dependence upon research knowledge instead of common sense knowledge in decision making by extension personnel, will be greatly expanded. From this, we should expect more social science research of the experimental variety. We should expect more experiments such as many psychology teachers have conducted in the classroom. For

example, an instructor might set up an experiment consisting of teaching one class using lectures only, another using lectures and student discussions. He then measures the effectiveness of the two teaching techniques, using grades as the dependent variable. (I have deliberately oversimplified my example because of time limitations.)

The Extension Service conducts many conferences on the university campus, but seldom does it evaluate the results by discussing the program afterwards. Specifically, in such situations, the resident social scientist would be happy to cooperate with the extension staff in conducting some research to tell the extension staff what it may expect if certain conference techniques are used.

This type of research should provide the Extension Service, as well as the social scientist, with knowledge of what can be expected from the various ways informal educational activities can be conducted. This type of research focuses attention upon the consequences that can be expected from the extension service program. The expansion of this type of research should result in a more scientific approach to what Dr. McCormick calls extension evaluation.

We should expect more research effort in this area due to the change in the educational objectives of the Extension Service. These objectives have arisen primarily because rural people have expressed a felt need for information on how to develop local resources. This aid calls for information on how to organize people for group action. It also has resulted in the expansion of extension research in the area of group behavior oriented toward community development.

From the trend toward expanding extension research, and greater numbers of extension staff members engaged in it, we should expect other contributions to the fund of knowledge on how to conduct the extension program. The procedure in scientific research calls for gathering all available related factual data on the problem. Frequently, while collecting these data, extension personnel have discovered that the social scientist already has conducted a great amount of research upon problems and questions similar to those for which they are seeking answers. Thus, we should expect greater use of social science knowledge by extension staffs at all levels.

We should also expect more contact and social interaction between the social scientist and the Extension Service as a result of the Extension Service seeking this knowledge, and its interpretation in light of extension problem situations. These human interactions should result in greater appreciation and understanding of each other by both parties. In this way, each will complement the role of the other and, in so doing, will stimulate more research and build the fund of knowledge by which the Extension Service will improve its performance.

Section IV.

MAJOR AREAS OF NEEDED RESEARCH

RESEARCH NEEDS AS SEEN BY AN EXTENSION SUPERVISOR

H. L. Axling
State Extension Supervisor
Washington State University

In considering the needs for research in Extension as I, an extension supervisor, perceive these needs, I first went to my job description as an extension supervisor. Here I noted that my responsibilities as an extension supervisor are divided into four areas, namely: Program, personnel, finance, and relationships. I have, as an extension supervisor, specific duties, outlined in writing, within these four areas. Therefore, it would be within these four areas that I would expect my research needs to fall.

Program

A number of my points in this area already have been mentioned by Director Anderson in his presentation. Therefore, I am going to mention only one other problem that I see as needing some type of research, which is as follows: "What do we as extension workers see as the place of contests of one form or another in the total extension program?" Are we using contests as a means to an end, or as ends in themselves?

My experience has been that many county extension workers and lay leaders in extension seem to think of contests and the winning of contests as the ultimate goal or end for an extension program. What methods have been successful in training county extension workers and lay leaders to use contests as a means to an end rather than the end itself? It seems to me that such a training program, including a statement of our philosophy of the use of contests and the place of contests in Extension, needs to be explored and stated clearly in writing.

Personnel

This is, of course, the area where extension supervisors do a lot of their work. One of the supervisor jobs each year is to evaluate county extension agent performance. I think we need additional studies as to how this is done in the various States, what particular methods of agent performance evaluation have been successful, and what methods have not been so successful.

Also, I would like to know how to tie agent performance to a specific merit rating. Many institutions require that their staff members be given an annual merit rating of one form or another. This merit rating obviously must be tied in some way or other to agent performance. How is this done most successfully? How do you relate this merit rating to annual salary adjustments? Is it fair to tie annual salary adjustments of an agent to the merit rating he receives as a result of his performance evaluation? We have to know or decide what constitutes "acceptable" and "high" performance in a county extension agent's job. Do we look upon

successful job performance as a state of "busyness" or do we think of it in terms of changes in attitudes, knowledge, and skills of people as a result of the extension program?

Another area which, it seems to me, needs some good research efforts is in recognizing characteristics and qualities of potentially good extension employees. What evidence do you look for in an agent which will help estimate his probable success on the job, before you hire him? Some research has been done on this but, it appears to me, more is needed. In Washington State we definitely try to avoid selecting a man or a woman for an extension job who has certain characteristics we have learned to consider undesirable. However, these are negative criteria; we need some real good positive guiding principles for use in the recruitment of extension personnel.

Some research has been done in the area of role perception. However, it would seem to me, we need further research in this area. What does the county extension agent see as the job or role of an extension supervisor, and what does the supervisor see as the job of the county extension agent? We have discovered that agents often view the job of a supervisor as something entirely different from what the supervisor understands his own job to be. Surely the major jobs within Extension are uniform enough across our country so that there are some principles which can be stated in terms of the job of the supervisor or the job of the county extension worker.

Another area wherein considerable research has been done but where more is needed, is in the area of the ideal load, in terms of number of counties and number of extension workers, for a supervisor or a supervisory team to be responsible for. There is a wide variance among the States in the load or job responsibilities of supervisors. What seems to be an ideal or capacity load for a supervisor to assure his most effective performance?

Another problem area within personnel, that of induction training for new personnel, also seems to have a number of unanswered questions. What is a desirable basic indoctrination training program for new agents? Many States have very extensive indoctrination training programs for new agents; other States have a very limited amount of training for them. Just how long should a training program be? When can you say a new agent is sufficiently indoctrinated in extension philosophy and principles so that he can be put into a county and be expected to develop an effective extension program on his own?

In many States the policy of granting tenure to extension workers is well established. This is particularly true in States where extension people are considered members of the faculty of the land-grant institution. After an agent has been on a job and performs satisfactorily for a given number of years, he is granted tenure, which means that he cannot be removed from his position without due cause and hearing. I wish we had some real good research to answer the question, "how does granting tenure to extension workers affect their efficiency and performance?" I have noticed that, as a general rule, agents who do not worry about whether or not they have tenure are almost invariably effective extension workers. On the other hand, agents who worry each year whether or not they are going to have tenure granted to them are usually agents who will, once tenure is granted to them, settle back into the job with a certain degree of satisfaction and perform at a minimum level.

Another area that I would like to explore is "how do various States provide for replacement of key personnel?" Is there a plan for advancing personnel within the various State organizations, or do they worry about replacement of key personnel when the time and need are at hand?

Finance

What is a good percentage of funds for extension support from various governmental sources? Should it be all from Federal and State, or should some percentage of funds come from the various counties concerned? What seems to be the most satisfactory solution to this question?

Relationships

Is public relations properly a function of supervision? Obviously, supervisors in the various States function to a greater or lesser degree as public relations people. Should this be a supervisory function and, if so, to what degree? A review of State experiences in this area would seem to be profitable and valuable.

These are some of the areas where I, as a supervisor, feel that research within the Extension Service needs to be done. Undoubtedly other supervisors can suggest other areas where they would like to have research work conducted.

MAJOR AREAS OF RESEARCH NEEDED AS VIEWED BY EXTENSION TRAINING AND RESEARCH PERSONNEL

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Tennessee Agricultural Extension Service
The University of Tennessee

A survey of the expressed opinions of 84 land-grant college workers having major responsibility for extension training in the United States was conducted in an effort to identify the major areas of extension research currently needing attention. For purposes of this report, the responses of 24 persons, whose titles and/or responsibilities indicated that they were either reporting for, or were in fact (1) State coordinators of extension training, (2) resident instructors of extension courses, or (3) State leaders of extension training and/or research, were reviewed and summarized.

FINDINGS

The major areas of research reported by respondents were classified according to the general headings under which they fell, and arrayed in descending order of frequency of mention.

General extension research classification	Number of mentions
Extension program development processes (including program planning, execution and evaluation)	58
Extension personnel (including administrators, supervisors, specialists, agents, other)	48
Extension's clientele (including needs, characteristics and roles)	43
Phases of cooperative extension work (including administrative, supervisory, specialist, county staff and other)	23
Areas of extension program emphasis (as in the Scope Report)	17

The major areas of research reported by respondents were classified according to the specific headings under which they fell, and arrayed according to their frequency of mention

Specific extension research classification	Number of mentions
Methods of communication and teaching	19
Evaluation and evaluative techniques	16
Administrative phase of extension work (including organization, (job satisfaction, communication within the service, promotion, staff benefits, tenure, removal and retirement, in that order)	15
Planning (not specified long-range or annual)	14

Specific areas continued

Specific extension research classification	Number of mentions
Training (not specified as to kind)	12
Roles and responsibilities of extension personnel (not specific)	11
Processes for involving people in extension program development (planning, execution and evaluation)	7
The present situation regarding Extension's clientele	7
Characteristics of Extension's clientele	6
Attitudes, knowledge, skills and abilities, practices of Extension's clientele	6
Identification of present and potential lay leaders	6
Selection and placement of extension personnel	6
Inservice training of extension personnel	6
Training of volunteer lay leaders	5
Management on the farm and in the home	5
Involvement of present and potential lay leaders	4
Role of local lay leaders in extension program	3
Job analysis for extension personnel	3
Job descriptions for extension personnel	3
Performance review for extension personnel	3
Public affairs as an area of program emphasis	3
Supervision of cooperative extension work	3
The specialist phase of extension work	3
Other (21 other specific areas were mentioned once or twice each and will be included in a suggested classification form that follows)	

A SUGGESTED CLASSIFICATION SCHEME FOR MAJOR EXTENSION RESEARCH AREAS AS SEEN BY EXTENSION TRAINING AND RESEARCH PERSONNEL

1. Extension's clientele
   - a. Their needs in areas of program emphasis for which Extension has responsibility
     - (1) Present situation
       - (a) Characteristics (educational levels, ethnic groups, sources of income, age groups, value systems, tastes and preferences, habits)
       - (b) Attitudes, knowledge, skills and abilities, practices
       - (c) Problems (undesirable aspects of the situation which can be changed)
     - (2) Desired situation (objectives)
       - (a) Characteristics (educational levels, sources of income, tastes and preferences, habits)
       - (b) Attitudes, knowledge, skills and abilities, practices
   - b. The role of local county volunteer extension lay leaders
   - c. Identification of present and potential lay leaders

d. Training of present and potential lay leaders
e. Involvement of present and potential lay leaders

2. Extension personnel (administrators, supervisors, specialists, agents, other)
   a. Roles and responsibilities
      (1) Job analysis
      (2) Job description
      (3) Standards of performance
      (4) Performance review
   b. Recruitment
   c. Selection and placement (including testing, use of predictive indices and techniques)
   d. Training (as to needs, adequacy and/or effectiveness of training)
      (1) Preservice
      (2) Induction
      (3) Inservice
      (4) Graduate

3. Extension program development processes (including program planning, execution and evaluation)
   a. Planning
      (1) Long-range
      (2) Annual
   b. Extension teaching (carrying out of annual plan of work)
      (1) Methods of communication and teaching
      (2) Processes for involving people
   c. Evaluation and evaluative techniques

4. Areas of extension program emphasis (especially as measured in terms of progress made toward objectives)
   a. Agricultural production
   b. Agricultural marketing
   c. Conservation and use of natural resources
   d. Management on the farm and in the home
   e. Family living
   f. Youth development
   g. Leadership development
   h. Community improvement and resource development
   i. Public affairs

5. Phases of cooperative extension work
   a. Administrative (tenure, job satisfaction, promotion, removal and retirement of staff members, staff benefits, organization, communication and financial)
   b. Supervisory
   c. Specialist
   d. County staff
   e. Special or other

AREAS IN WHICH RESEARCH IS NEEDED IN AGRICULTURAL COMMUNICATIONS 1/

Hadley Read, Extension Editor
University of Illinois

The basic process of communications serves as a logical basis for identifying specific areas of need for communications research in agriculture. In this process the communicator, who may be an individual or an institution, selects and transmits a message, which can vary in content and treatment, over selected channels to desired audiences for intended effects.

The following statement identifies at least some of the research needs within each of the four broad areas of the communications process - the communicator, the message, the channels, and the audiences. The specific questions listed under each area are intended only as examples of the types of questions that research might help to answer. They are not intended as suggested research project titles.

THE COMMUNICATOR
(Individual, Group, or Institution)

We need research on:

1. The characteristics of the communicator as they affect or influence the communications process
2. The communicator's conception of this role as it affects the communications process
3. The communicator's conception of his audience as it affects the communications process
4. The use of time and budget of the communicator as it affects the communications process
5. The audience's conception of the communicator as it affects the communications process

Specific questions about the communicator that may merit consideration in research studies:

1. What is the relationship between extensive use of mass communications by extension workers and their success as extension teachers?
2. How much time do county agents and specialists spend in preparing communications materials?
3. What factors are associated with the size of communications budgets?
4. How do extension workers appraise the relative values of communications methods?
5. Do county agents feel qualified to carry out communications programs?
6. What is the relationship between extension worker qualifications and the communications programs they carry out?

1/ This is an adaptation of an outline prepared in 1957 by the Committee on Communications Research of the American Association of Agricultural College Editors. Committee members included William F. Calkins, California; O. B. Copeland, North Carolina; Bryant Kearl, Wisconsin; John A. Murray, Delaware; and Hadley Read, Illinois, Chairman.

THE MESSAGE
(Content and Treatment)

We need research on:

1. Content of the message as it affects interrelationships among audience characteristics, desires, felt needs, and expectations
2. Content of the message as it affects channel requirements
3. Treatment of the message as it influences and is influenced by:
   a. The communicator
   b. Message content
   c. Channel
   d. Audience
   e. Purpose
4. The relative effectiveness of different appeals in the content of messages designed for specific audiences

Specific questions about the message that may merit consideration in research studies:

1. To what extent can you use technical terms in communicating with the farm audience, and expect the audience to understand?
2. What is the relationship between reader preferences on treatment and effectiveness?
3. What is the relative effectiveness of graphs, charts, tables, copy, and illustrations in publications?
4. What are the factors that affect comprehension of charts and graphs?
5. What is the effect of change in handling the same bit of information?
   a. Change in organization
   b. Change in appeals
   c. Change in channels
6. How much detail can you use effectively in a radio talk?
7. What is the role of humor in farm information?
8. Is a picture worth 1,000 words?
9. Is there a "best" treatment for different groups - urban, suburban, commodity?

THE CHANNEL
(Methods, Media)

We need research to:

1. Identify and describe channels
   a. Physical characteristics
   b. Media availability and accessibility
2. Explain and understand channels
   a. Impact on audience, and why
   b. Media acceptance by audience, and why

Specific questions about channels that may merit consideration in research studies:

1. What criteria can be used to determine the medium or combination of media to use in a given situation?

2. What are the cost-effect ratios for the different media - direct mail, publications, radio, news services, etc.?

3. How does farmer choice of media differ in situations where few media are available from those in which many media are available?

4. Is there a better way to distribute news stories to outlets than through a weekly packet?

5. On what basis do media managers accept or reject agricultural communication services?

6. How does season affect acceptance of copy by media managers?

7. What is the effect of different promotion techniques on bulletin distribution?

THE AUDIENCE

We need research to:

1. Identify and describe the audience
   a. Physical, social, and economic characteristics
   b. Acceptance and adoption of farm practices
2. Understand and explain the audience
   a. How the audience thinks, and why
   b. How the audience acts, and why
   c. How the audience feels, and why

Specific questions about audiences that may merit consideration in research studies:

1. Why are some recommended farm practices adopted more quickly than others?

2. How will motivation appeals vary in effectiveness by type of practice recommended?

3. What are the factors that affect credibility of source and channel; how do they affect credibility of source and channel?

4. What influence does the wife (children, others) have on farm decisions; what influence does the husband have on home decisions?

5. Does adoption of one new farm practice precondition a person for the adoption of other practices?

6. How does socioeconomic status affect audience attitude toward channels?

7. What effect does charging for publications have on distribution and use?

8. What is the level of farm audience comprehension of technical terms?

RESEARCH IN EXTENSION

Eva L. Goble
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I can speak about areas of research needed in Extension right now with considerable feeling because the total situation is so fluid that we are all extremely aware of the need for more light. This is particularly true in home economics where research has been so scarce. In specifying these areas, however, I must protect myself with the qualification that some of the areas may have work already done, of which I am unaware. I have discovered, in working with home agents, that requests for research often mean failure to become acquainted with the literature.

With this protection, I will plunge in. First, I'd like to say that we need a good historical analysis of what role Extension has played since its beginning and what factors really have contributed to its success. I have a feeling that our narrow view of our past success is now standing in our way, because we have duped ourselves with our own success stories. We became so self-indoctrinated that we forgot we exist in a society which is itself changing.

This condition reminds me of Marshall's old illustration of the position of a tree in a forest. If we only watch a tree we make many observations of its height, girth and general health, but we forget that the forest is also changing all the time. One tree falls and more sun and moisture fall upon a young sapling. A fast growing tree temporarily overshadows a slow grower. The one tree is in a constantly changing relationship with the forest.

Another area which certainly needs some insight is the self-image of extension workers. I labor somewhat under the impression that we are acting a little like a two-year old who has a new baby brother. Our behavior has some overtones of regressive behavior which leads one to speculate on what kind of person is attracted to extension work. If this kind of a person was once needed, is he the kind of person still needed? Competition among disciplines is a problem. Why is any body of subject matter "my subject matter?"

Another problem is how much do we know about how different kinds of subject matter are transmitted? What is the real difference between teaching nutrition and insect control? What is behind accepting one area of information and rejecting another? Is there such a thing as conditioning for learning or at least testing or trying learning? Is this a condition of the learner or is it connected with the subject matter or the teacher?

In spite of all the talk about decision making, do we really know how decisions are made? How does it happen that there are some days when I can toss them off one after another without much stress, and others when I may get hung up on some small decision of inconsequential nature and fret about it endlessly? Do we know what kind of information people really need for decisions?

How does it happen that we sometimes get a rural development county well organized with committees for analysis and good problems to work on, but it never gets any further. On the other hand, another poorer county may start in a very

haphazard way and keep rolling. What part does risk play?

As consumership becomes increasingly important, do we really know how we can teach intelligent consumption; or are we to be tied to actual things? If we are, can we possibly compete with business interests, which are more highly specialized?

Why do extension workers often dash in to try new techniques but fail to document the theory and methodology, evaluate the results, or retain an interest in replication? How do we build an experimental attitude in people which is complete, documented and continuing?

What kind of an organization would best generate a climate of concern for learning among extension workers themselves? It seems to me that too many of us seem to get learning by doses without ever getting a genuine feeling of its value. Can we hope to overcome this handicap without allowing specialists and agents time to research what they teach as well as to teach it?

Do we really know how much is being taught by the "go and tell method," which no longer needs this method? How are we going to find out?

With all of the experiments going on with special audiences, how much is being documented? What theories are being developed? Are they reaching the literature of adult education? Why is there so little material printed in permanent form to contribute to the adult education literature?

Do we really have any good data on the techniques which will work with one audience of a certain socioeconomic status, and whether they will work with another? I have a theory from doing some work in East Chicago that there is a difference.

Now, I may really annoy you. We are so practical-minded. Has anyone ever tried teaching agriculture and home economics by the liberal arts route? Where does anthropology come in? How do we understand people in terms of land? Isn't this pretty basic?

I have observed that in reorganization we seem to just follow the leader. One State does one thing. Soon every other State does the same thing. We are talking about area specialists, administrative reorganization, etc. I am one of those people who wonders what would occur if one went the opposite way of the crowd.

Suppose we raised our requirements and pay - so we got top men and women in the counties. Then suppose we employed help to do much of the trivia, which an agent works with, and supplied the agents with good high-level publications. What I am suggesting is higher level high-level people and more lower-level help instead of more high-level help. This is interesting to play with.

What do we really know about the effect of sequential courses? Have we skimmed the top and worked with the passing parade so long that we are unable to do anything else? Is it possible that at least one deeper effort should be carried on continuously? Should each specialist or agent have one field where he is expert in a true sense of the word?

The people tell us all the time that they are under-challenged. Do we know whether this is true?

If we think of the program as curriculum, and we do research on the curriculum, will the curriculum improve? Will the attitudes of the staff improve? Will the competence of the staff improve?

AREA OF RESEARCH IMPORTANT TO EXTENSION FROM THE VIEWPOINT OF THE COUNTY WORKER

Ben Shively
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I will try to list the areas of research which I think are important to the extension worker at the county level. I have grouped them into three major categories; possibly there are many more, but these are the three that I rate as being most important.

Personnel Evaluation Methods

First is research in the area of personnel evaluation. All of us, day in and day out, make value decisions concerning our work. Also, we make decisions concerning others on our staff, in our county, and in our area. It is of great importance to us all to be able to form some impression, either objectively or subjectively, as to whether or not the work we are doing is effective.

However, just knowing that we are well liked, and that we are making a contribution to society in our work, is not enough. Being able to ask ourselves or our supervisors how we are doing - are we doing a good job - and receiving the answer, "Well, O.K." "Good enough," or something like that, can be very frustrating. We would like a more measurable type of answer.

Research has been, and is being, conducted in the area of evaluation of personnel. I would like to suggest the following subareas for further exploration. Most of these became important to me during preparation of my master's thesis, which was concerned with merit rating devices for evaluating extension personnel.

Guides for Self Improvement Most of us are interested in knowing how, and in what areas, we need improvement to become more effective extension workers. Good self-evaluation instruments would be appreciated.

Evaluation Devices to Provide Objective Bases for Merit Determination Some research in this area would indicate that these can be designed. Some of us would welcome a common, objective method of evaluating personnel that could provide at least part of the basis for promotions, salary increases, etc.

Evaluation Tools for Use by Supervisors in Counseling Work with Agents Such tools would minimize personality clashes between agent and supervisor by providing an impartial and objective basis for discussing ways of improving agent performance.

Guides for Developing Inservice Training Programs We would like more research concerning evaluation techniques and the results of evaluation techniques on personnel, as guides for the development of inservice training programs for extension workers.

Organization and Administration of Extension Committees and Programs

The second major category of research I would suggest is the area of organization and administration of extension committees and programs.

Our extension programs across the country are built on the people in the communities, working as committees and as individuals. I recently picked up a master's thesis which concerned itself with research on the "Organization, Impetuation, and Development of a County Extension Committee in a County." This study revealed several interesting things as far as this one committee was concerned.

The question comes up, "does this research provide a guide that could be used effectively in other situations?" Continued study and research of this type, I feel, is very important to the continued improvement and progress of the Extension Service.

This study also indicated and suggested research in certain related areas including: (1) Research to provide increased knowledge for determining the abilities of our young people, (2) development of well defined criteria for determining leader ability, (3) identification of methods we can use to perpetuate our committees, and (4) research on the effectiveness of the different organized groups which function in our counties and in our society, and upon which our extension programing and committee work are based.

Some of the latter, as illustrations, would be our 4-H Clubs, our older youth groups, the breed associations, and the many other organizations with which Extension works. Research would provide information as to how important these are to our communities and what services they provide and would thus provide an indication of how much time and effort should be devoted to this type of activity.

Program Evaluation Methods

The third major area which I would like to propose would be research in the area of program evaluation. This is an area which I feel we have neglected, partly due to dislike of having to do this type of work and partly because of lack of enough knowledge and information concerning methods that can be used effectively for doing the evaluations.

Research could provide the answers for determining if the number of telephone calls an office receives, the number of news stories written, the number of individual contacts made, etc., could be used as means of evaluating a program. Very definitely, I feel that we need to focus our attention in the area of program evaluation as the basis for continued progress of our Extension Service.

Section V.

REGIONAL RESEARCH IN EXTENSION

BASIC REASONS FOR ENGAGING OR NOT ENGAGING IN REGIONAL RESEARCH

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Definition

In the first place, the definition of "regional" seems in order. For present purposes, "regional" means to me a geographic area of the United States larger than one State; also, that those States, or parts of States, which are included in the so-called region are tied together administratively, or are similar socially, economically, or in some other aspect. It happens that most of the regional research I have worked on has covered extension service regions - the northeastern region, the north central (or just central) region, the western region, and the southern region. However, I have also worked on projects that covered the New England States - a region in themselves - on projects that included certain areas of the Central States, and so forth. Ordinarily, the States within a "region" would be contiguous.

Regional research, then, means to me a research project in which a number of States, similar for some reason or other, participate.

Advantages of Regional Research

In my opinion, there are at least seven basic reasons for carrying out regional research, as compared to research projects limited to single States.

1. The situations available for study within one State invariably are limited by such factors as administrative policies (in our case, those of the Extension Service and the Land-Grant College), economic status, cultural patterns of the people, and size of population to be studied. When we need to compare subgroups of the population, we do not always find all possible subgroups in sizes adequate to study within one State. When subgroups are defined on the basis of criteria which have little or nothing to do with administrative policies, but are closely related to human characteristics, we can look for them most any place; the name of the State is of little importance.

State A. may wonder about its educational success with people of certain characteristics, but it happens that people with such characteristics in that State are relatively few in number and are scattered throughout the State, making data collection expensive and difficult. By combining States for a single study, we can obtain enough information from people located in easier-to-reach areas to make possible a reliable study without encountering excessive cost.

2. Often there is a lack, or shortage, of trained personnel and other resources in any one given State staff to carry out the needed study. If a study is made in only one State, that State is limited in the amount of help it can receive from the

Federal Extension Service, and is even much more limited in the amount of assistance it can ask for from other State Extension Services. In a regional project, the abilities, talents, and other resources of all States involved are centered on the one project; what one State lacks, another may have.

As far as the Federal office is concerned, its staff is more likely to have the time and money to work with a regional committee on study plans and data interpretation and application than it would be able to work with each State individually. Up until the last few months, I have been working with 37 States in three regional projects. I could not possibly have worked in all 37 States on 37 different research projects.

3. Mutual stimulation and personnel development result from the exchange of ideas among the staffs from the participating States. This could be the most important advantage of regional research projects. A staff in one State, accustomed to working together on the problems identified by themselves, and using methods developed by themselves, cannot help but want ideas from other staffs to consider, adapt and use. In developing a regional research project, and going through all of the steps in research, this exchange of ideas can be exploited to its fullest extent.

Staff members from only one State, who go through the bewildering and frustrating process of developing a research project design, often feel inadequate. When working with staff members from other States, who are suffering in the same way, they do not feel inadequate, at least for long, but are challenged to find solutions to apparently unsolvable problems.

This all might be summarized into personnel development. In those States where there is a studies person on the staff, he find himself often in what I call a lonely position. He is the only one of his kind in the State. When working on a regional project, he is cooperating with coworkers, whatever the titles of the other persons assigned to the project.

4. A regional research project lends security to the participating State staffs. In extension research, we are often deliberately looking for what is wrong with what we do and, whenever we study progress and success or failure of accomplishment, we are bound to come up with inadequacies or errors in our work. This is inevitable, but such findings lead toward greater success in the future if we give them proper consideration in planning followup actions.

Our State staff may hesitate to open its closets to reveal any possible skeletons, when no other State even seems concerned about the problem. When several or many State staffs all recognize the same problem, discuss it openly among themselves, and study it for all to see the results, no one staff feels inadequate. This results in more research findings becoming available for the improvement of the Extension Service, for public relations work, or for any other purpose for which they can be used.

5. Regional research projects allow for the use of research techniques which are not available to all States separately because of time and cost. Some States have completely adequate educational research facilities and staffs at their land-grant colleges. Most of them do not. Some States can afford to pay for adequate research consultation and facilities; others simply cannot. When several States pool their resources, staff, and money, better research can be done - and more of it.

As an example of the use of a resource - for the Western Regional 4-H Club Study - twice I asked Dr. Ralph Tyler to review attitude and opinion tests. I would definitely have hesitated to ask him to do so for a one-State study, but I did not hesitate to ask his help for a 13-State study. Even if he had charged for this service, the cost would not have been prohibitive with all the States contributing to his fee.

6. When the study is completed, and findings are interpreted, the regional research project has a real advantage in putting findings into use. The larger the number of people who discuss the findings and the implications to their programs, the larger the number there will be who understand the implications and are both willing and anxious to apply them to their own programs.

I have noticed through the years that when a representative of a single State reports on study findings and implications and plans to put the findings into effect, staff members from other States question him rather rigorously and, sometimes, critically. No matter how significant the findings, there is little evidence of their being used in other States. However, when staff members of a region report on findings from their regional study, the findings are much more analytically discussed and they are much more likely to gain acceptance and use in States that did not participate in the study.

I will give an example which does not include a regional research project, but which has some of the characteristics. One State did a time-use study of club agents; significant findings were found, and the State did something about them. Nothing noticeable went on outside the State as a result of that study. Then a second State carried out a similar time-use study. The effect of two States having found out almost the same things was extremely noticeable.

7. It is possible, if the samples are large enough, for each individual State to find out that it is not alone in its problems, frustrations, and failures. This seventh advantage, the last I will mention, was not made clear to me until I had participated in several regional research projects.

Almost invariably, we find that differences among States are much less extreme than differences among counties within a particular State. It is very seldom that, in a regional research project, a single State must face alone the fact that certain undesirable situations exist within its geographic borders. The cooperating States find themselves able to say "we" in connection with practically every finding. This advantage relates, of course, to my fourth one, concerning security in numbers.

Disadvantages of Regional Research

After going through these basic reasons for participating in regional research projects, I find that I do not have so many reasons for not participating in them or, expressed differently, so many disadvantages. In fact, I believe that Dr. Ralston and Mr. Kreizinger are in a much better position to talk to this point. However, I will mention this difficulty:

1. The differences in extension methods, policies, and terminology among States inhibit consensus, comparisons, and generalizations. We are now starting a study of factors associated with dropout of first-year 4-H local leaders in the northeastern States. Our success in carrying out this study will depend on our being able to so define "local 4-H leader" that we will be sampling the same

"population" from each participating State. A local 4-H leader in one State may have entirely different responsibilities from those of a local 4-H leader in another State.

We have run into similar problems with "project," "club year," "organization of a club," and so forth. I believe that, within the northeastern region, we have all the classifications or definitions of local 4-H leaders that exist in the United States as a whole. Believe me, our regional committee meetings have been frustrating, slow, but - finally - satisfying.

Beyond that one point, I am going to let Dr. Ralston and Mr. Kreizinger carry on.

However, before I quit talking, I want to run quickly through the first few years of the "Western Region 4-H Club Study of First-Year 4-H Club Members" to illustrate the seven points I listed as reasons for carrying out regional research, and the one point I listed as a disadvantage.

The Western Region Study

The "Western Region 4-H Club Study of First-Year 4-H Club Members" was started back in 1949, so it is now in its 13th year. It started with the full approval of the Western Region Directors as a group, and of the individual State Directors for each phase in which their own States participated. Since it is a regionwide study, and a large one, it has received the personal attention of the Directors, which has been very helpful to the study. The regional committee has a Director as chairman. He may have missed one committee meeting during these 13 years, but no more.

Now I will take the factors I mentioned in order:

1. Most of the Western States are too small in population, too small in subgroups, and too limited in budget to carry out large studies, by themselves. Some of the Western State can very well do the studies by themselves - California, Oregon and Washington, especially, and probably Colorado - but the others would have some problems.

2. Most of the Western State Extension Services do not have trained extension studies persons on their staffs, or available to them at the institution where they are headquartered. People like Ev. Kreizinger and Elbert McProud have done their share. However, during the 13 years, the outstanding achievement has been the development of the State 4-H staff members in their ability to carry out data collection and, often, tabulation and interpretation, as well. I have been their study consultant, but I have seldom gone into an individual State to assist with data collection. When I have, it has been because a new and, as yet, inexperienced staff member has been given the responsibility for the phase of the study then being worked on.

3. In addition to what I have just said, the regional meetings have given the State staff members a great deal of opportunity to exchange ideas. If it has helped people like Ev. Kreizinger, I will let him tell you that.

4. Prior to this regional study of first-year 4-H Club members, many State staffs were hesitant about discussing or releasing data on the dropout rate of their

first-year 4-H Club members. They seemed to be on the defensive about this "personal" problem. Then the 13 Western States revealed their data - which really showed a higher dropout rate than many other States had - and States throughout the United States began discussing this problem openly and in a completely objective manner. Now, findings from the western study are in great demand by all States.

5. In connection with the western study, the major research techniques used - which individual States might not, or could not, have been able to use - were the collection of vast amounts of data which allowed for almost endless cross tabulations, the testing and use of attitude and opinion questionnaires, and the use of separate specialized questionnaires in single phases of the study. No individual State would have had the time, money, or staff to develop, by itself, each of these tests and questionnaires.

6. A few years ago, the Western Region Directors thought that there was enough information available from the study to justify subregional meetings of administrators, supervisors, and State 4-H Club staff members to discuss the findings and their implications. These meetings followed the phase which studied the training given to local 4-H leaders in leading training meetings. I have never known a study to be so widely known, nor so often quoted and discussed. Other regions have used the findings and conclusions.

7. To the satisfaction of the State people, it was found that the patterns of 4-H Club member tenure, local leader tenure, local leader training, and other phases of 4-H Club work were almost the same, State by State, throughout the region, but they varied greatly within States, county by county. This means that these States found they could use data from other States, based on statewide samples, but, within States, each State staff would need to recognize that counties differ and need different amounts or kinds of help.

So far, I do not believe we have run into any disadvantages of a regional research project. It is true that California's size, Oregon's 4-H enrollment, and such factors do overly affect the regional data. However, since we have found that the States do not vary much, this has not been of major concern. The only phase of the study which this did affect much was the leader-training phase, and that only insofar as the average number of training meetings per county was concerned.

REGIONAL RESEARCH IN EXTENSION: REGIONAL AND ADMINISTRATIVE POINT OF VIEW

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Regional research programs in Extension have been, are, and will continue to be useful in adding to the body of knowledge about Extension. Regional research studies on certain problems have added valuable and useful information beyond that added by individual States. Mrs. Laurel Sabrosky previously has pointed out the basic reasons for engaging or not engaging in regional research. Additional concerns will be mentioned in this paper.

First of all, I would like to establish the fact that research about Extension, as a means of carrying out informal education, is essential and very important. Research conducted through the respective State Experiment Stations provides much of the results and information in the basic subject-matter areas which are taught by extension personnel. Research on methods and processes of doing extension work and on organizational procedures and patterns is essential, also. It is not just research in one of the above areas - content, process, organization - but a combination of these, which is fundamental to continued improvement in extension efficiency and effectivness. Experiment stations have financed only limited amounts of research in "process" and "organization." It thus appears that Extenion will have to conduct the major research in these areas.

The program of the Cooperative Extension Service is a huge educational venture. The total Federal, State and local expenditure for 1960-61 is $150,097,712. It has been estimated that people, who serve as leaders and who cooperate by providing services and opportunities for carrying out these educational programs, spend in time, materials and money, 25 times as much money as the amount provided by public funds. Of just the public dollars, how much does Extension spend for research on process and organization? An estimate is not known, but I have the feeling it is a very low percentage.

"Change" is occuring rapidly in all areas of American society for which extension programs are developed. Extension must change faster than the people it serves if it is to maintain its educational leadership. These changes, if they are to be sound and logical, must be based on the best possible available evidence. Research will provide the best evidence.

Since Extension is on the cutting edge of new informal "education in action" programs, research should be a part of these efforts in order to find which of them provide the greatest learning impact for people. To date, there is only a limited amount of knowledge about Extension that has been developed through planned research. Much of what is known and used has evolved by trial and error and is based on opinion not supported by research data or other documented evidence. Research programs in Extension are young. Research tools and techniques are available today to permit us to build substantial and useful extension research programs. Let me repeat, if our extension programs are to be successful they must be founded on good, adequate, and meaningful data, and these must be interpreted in keeping with the times.

Does regional research really have a place in extension research programs? The answer certainly is an affirmative one. However, it needs to be qualified. There are some distinct advantages, in my opinion, and yet certain disadvantages that tend to restrict some regional research. I will express some thinking, both pro and con, about regional research.

Advantages

By way of advantages for conducting regional research, I will mention five and comment briefly on each.

1. Because of the organizational uniqueness of the Cooperative Extension Service - (a) only one in each State, (b) one in which Federal, State and local monies are used, (c) one which combines the work of a governmental agency with that of educational insitutions, and (d) one which builds programs around the specific needs of people - many programs requiring research attention can be studied effectively only when several States pool their concerns and resources. Regional research programs, if properly designed and executed, can make important contributions to (a) organizing and administering productive State cooperative extension service programs, (b) establishing rewarding and satisfying personnel management systems, and (c) developing effective and purposeful "education in action" extension programs.

For this audience, the specifics of the many problems in each of these three areas need not be dwelt upon. You are actively researching significant concerns in these areas. I would point out, however, that much more information is needed about the efficiency of our program - the number of resource inputs per unit of results, or product output. This means we need studies which bring together data about content, process, and organization in proper perspective. It is not enough just to have information about certain isolated phases (this is needed too), but rather facts and ideas about the relatedness of factors that make for a successful and vigorous total program.

To summarize this point, there are only a few extension organizations, there is only a limited number of similar positions within them and, frequently, there are isolated problem areas within each body. Thus, samples are often too small for efficient research by the individual State. Therefore, inter-state research can be conducted to advantage.

2. Regional research will clarify and delineate concepts, ideas, problems, and opportunities of Extension. In other words, it provides opportunities for extension workers with similar responsibilities to exchange viewpoints, categorize concerns and known facts, develop theories, design research, analyze and interpret data, and project future research needs.

Extension workers have numerous meetings, but most of them are concerned with action rather than critical and scientific analyses of their program. Regional research activities will provide seminars, such as this one, and other analytical meetings, and will aid in maintaining continuity of information for extension growth and development. The latter can occur only when people are adequately trained to make best use of their enriched understanding. Regional research programs can serve as inservice training programs to accomplish this objective.

3. Regional research will stimulate professionalism in Extension. At the present time, no national cooperative extension service educational meeting is held where extension research and other professional papers can be presented. This, I believe, we need. I realize extension worker interests are fractionated into many facets, thus making it difficult to find a common basis for developing continuity and unified direction for our many-sided organization. But, we must try tp develop such a basis.

Extension work will evolve into a recognized profession only by building a body of knowledge which is unified and useful for accomplishing specific objectives. People of a given profession must continue to build information and facts and secure data to create new concepts that satisfy and meet the needs of those who are working in the profession.

A group of individuals and/or organizations may believe they are professionals, but they will be recognized as such only when other persons and/or organizations accept them in their expected role. General acceptance will occur when other groups, such as other adult education groups, voluntary organizations - Red Cross, etc. - find their information can be useful to them.

Regional research will aid, not only by its published papers for documenting facts for programing, but also by its research teams working with related organizations with similar problems.

4. Regional research will provide additional resources for extension workers. As a body of "know-how" develops new, varied and additional research resources and techniques will be required. In order to gain access to these resources and to make their wants known, a group often finds it to its advantage to voice its requests in several places simultaneously.

Resources are found in the talents, abilities and interests of people and in facilities, equipment and services. When these resources are pooled and focused on specific problems, they will bring about more, better, and more useful results. Frequently, additional resources can be found when those concerned are aware of what is needed.

As regional investigations are carried out, many States will find that (a) many local resource people are available to them for the asking; (b) many other university staff members have a genuine interest in their problem or ones closely related; (c) other researchers (communications people, sociologists, education people, etc.) are looking for opportunities to test their hypothesis, which can be provided by Extension to the advantage of both groups; (d) local financial and personnel resources can be found outside university resources; (f) facilities are available for aiding in collecting and analyzing data; and (g) many other people will be willing to give guidance and direction.

5. Regional research will tend to point out the unified needs of extension, in the different States and for the entire country, for its continued growth. Conservative States may be encouraged to venture into new areas of programing; liberal ones may be kept from moving too fast into areas not ready for public acceptance.

The question has often come to my mind, "Would specific programs get better support if a number of States or the entire country would agree to request funds for solving specific nationwide problems?" I'm aware of "program projection,"

"rural development," etc., but these are extremely broad. What about content problems in the field of agricultural technology, like genetics, nutrition, disease and competitors, etc., or in agricultural farm organizations, such as business organization, financial organization, operational efficiency, etc.?

Our requests, somehow, must be made specific enough to be meaningful to those from whom we ask support. We could ask for help in specific areas of "process" and in "organization" for doing extension work. Solving problems like these would focus attention on Extension as a positively contributing educational medium for improving the welfare of all people, thus encouraging our acceptance as professionals.

Disadvantages

Along with the advantages for regional research there are, in my opinion, some disadvantages of varying degrees of significance. I will list nine briefly as most of them are self-explanatory.

1. Some organizations, or parts of them, in some States might think, "As long as others will do the necessary research, why invest my State's time and money?" This provides an escape.

2. Often problems are defined and preliminary work is initiated, but, for any of several possible reasons, the research is not conducted due to the failure of the State originally assuming the leadership and/or contributing to a particular phase of the research to make good its commitment.

3. Can regional research be sufficiently well organized so that each State will recognize and carry out its responsibility for each phase of the project? Frequently, the regional approach is cumbersome and communications are inadequate. Regional research requires careful organization and planning.

4. In some regions, too much conformity in programing might occur because of the emergence and dominance of an influential person or group. All too frequently, creativity is decreased in this way.

5. Regional research of some kinds may be more costly than when done within States, even though the research may not be quite so complete and accurate. Some of the factors might be (a) too much time required to get total understanding of problem, (b) personnel turnover, (c) data for analyses not uniform, (d) data old and cold before they are analyzed, (e) tremendous amounts of time spent in meetings without really grappling with basic issues, (f) excessive travel, etc.

6. Some States may be enticed into a research project, just because a group feels that all States of the region should be included for a total regional effort, when really they are not interested and/or the problem is not applicable to them. If a State does participate, it may feel the information obtained should be used, regardless of appropriateness, or some staff member may use it out of context or when it really does not have application.

7. Regional research requires an increase in out-of-State travel. Not all States can participate equally because of institutional regulations, etc.

8. Extension staff members can become too interested in research and devote more time to it than they should, thus reducing their program productiveness.

Extension personnel sometimes become over enthusiastic about doing research, even when they are not sufficiently well trained to do a thorough and adequate job.

9. Most of Extension's dollars are earmarked for "education in action" programs and not for research. Those who want to do some research often cannot find sufficient funds and become discouraged and dissatisfied. Since funds are restricted, they should be used for research which will be of greatest use to the individual State. Regional research, because of various influences, may have diversionary effect.

Considerations Before Involvement

In determining a State's participation in regional research, the director and the administrative and program staff will consider many factors. Some of them are:

1. Will the results of the regional research problem really have use in our State?
2. Does it come high on the list of problem priorities which need attention?
3. If it is of high priority, how much does it cost, and can we do it cheaper alone?
4. Does our State have competent people really interested in the project?
5. What other States are participating?
6. Who will be their representatives on the project?
7. How long will the project take?
8. Will the results be applicable to our State?
9. Will the research results be available in sufficient time to be useful?
10. Will the results cause major program and/or organizational difficulties?
11. What pre-planning must be considered to make effective transitions?

The Division of Extension Research and Training of the Federal Extension Service has given excellent guidance in how to conduct regional research. I hope it will continue this leadership. Its 1961 "Annual Program and Work Schedule" is an excellent example of planning. States could well use many of the ideas expressed in this document.

All Cooperative Extension Services need more staff members who are trained for conducting research. Better research techniques are needed. Your attention is directed to the California Agricultural Extension Service publication entitled, "Experimental Methods for Extension Workers." In my opinion we need more help in research methods for all phases of Extension.

Summation

1. Productive organizations are composed of productive people.
2. Productive people work effectively and efficiently with ideas - small and/or large - intensive and/or extensive - minor and/or great.
3. New ideas, whatever they may be, come from the knowledge and experience of other people.
4. People must spend time together - directly or indirectly - for idea communication and synthesis.
5. The degree of idea receptivity and use increases as the degree of interpersonal condition and involvement increases.
6. Idea production by people is directly proportional to idea exposure and receptivity.
7. A fact or idea not related to other facts and/or ideas is lost and valueless.

REGIONAL RESEARCH PROJECTS

E. J. Kreizinger
State Leader of Extension Research and Training
Washington State University

My definition of regional research will have to consist of examples of what I have come to think of as regional research. I will mention two extremes by way of example. First, there is the kind where the Federal Extension Service is responsible for most of the work. I think immediately of the 4-H Studies and the Home Demonstration Study, although the latter was national as well as regional in scope.

Then, there is the kind wherein the Federal Extension Service performs primarily a coordinating function. I might mention the Farm and Home Planning Study in this connection, since Washington represented our region in this national study.

Beyond this distinction in terms of Federal staff participation, I think of regional research usually as being more comprehensive than the typical State study. Furthermore, it is likely to have more depth - possibly a continuing study or a series of studies having cyclic or sequential characteristics.

ADVANTAGES OF REGIONAL RESEARCH PROJECTS

Again, I will have to reply primarily on my own experiences for this and the next section. One of the major advantages regional research provides is the opportunity for the exchange of ideas, viewpoints, and experiences among members of the planning committee. Quite often we work in virtual professional isolation within our own States and must look to other States for other members of our peer group. Say what you will for the academic atmosphere of the typical college or university campus, there is often little opportunity for talking shop with colleagues who have different immediate interests.

A second advantage of this interchange is the opportunity for gaining consensus in philosophy and terminology. Of course, this seldom becomes complete, but it helps to know what the general thinking is about the fundamentals of our work. It helps, too, in developing common viewpoints and understanding. At least it exposes us to views of others and aids us in assessing the general level of acceptance of those views which we hold.

These research ventures help us to grasp the big picture - the real purpose of research. We become exposed, or re-exposed, to approved processes of research and to the value of developing basic methodologies and philosophies. It is all too easy for us to get into the rut of doing practical research only, especially when this is the only kind of research some of our colleagues in our home State expect or want from us.

Because of the more formal legitimation required of regional research, it becomes necessary for administrative and supervisory personnel to be aware of and to approve the research. In the course of gaining their formal approval, countless opportunities are provided for making them aware of the potential value of extension research, as well as what has been gained through extension research already completed. Such exposure is bound to provide extension workers with ideas they can use, or modify for use, in their own work.

Quite often results of regional studies suggest to State personnel what the direction of their own related research should be. They might suggest to them a need for replication of the regional study on a base that would be meaningful to a single State; they might suggest the content and nature of necessary followup State research.

An advantage this group will appreciate lies in the fact that the county personnel who become involved in these regional studies often gain a more favorable attitude toward quality research. What is more, they become more tolerant - even appreciative - of relevant research done in education and other social science fields. To me, as a training person, this is a decided step forward, because I notice all too often, particularly among the men agents who were educated in fairly narrowly defined subject-matter fields, a rather obvious contempt for research of other than the "pure" variety.

Because of the "first team" status of regional extension research, we have been able to involve - quite willingly after the initial reluctance wore off - some of our own competent researchers in our experiment station staff. In addition to gaining their valuable assistance, I feel an ever more substantial gain has been scored in terms of the improved impression they now have of what extension research is and can be. I feel equally certain we can look forward to their continued good will and assistance.

Another big advantage of regional research is that it can tackle problems, on an adequate base, that are of both immediate and lasting interest to Extension. Unlike the frequent situation in State ventures, wherein strictly extension research must be tacked onto some other research project or dealt with at odd moments in piecemeal fashion, a regional extension research project can be planned, financed, staffed, executed, analyzed, and reported as a continuous operation.

I have mentioned what regional research does for agents who become involved directly. However, I feel it is making a considerable contribution all along the line by making all personnel aware of the value of and need for basic data secured in objective fashion for use in planning and evaluating their own work.

DISADVANTAGES OF REGIONAL RESEARCH PROJECTS

I have fewer items for the negative side of this presentation. However, they merit attention and, if ignored, could lead to neutralizing any or all of the previously mentioned advantages. Fortunately, remedial actions come to mind almost as soon as I mention the disadvantage.

Quite often results of regional studies are challenged for use in a particular State because of the improbability that the regional sample could be considered representative of any one State. I would have to agree that this has been true in some of the studies in which I have been involved. However, there are ways of drawing samples to make them reasonably representative of both the region and the States within the region. At any rate, considerable use of the findings can be made in pointing out trends and in making comparisons with more suitably localized studies.

Another disadvantage is that validity may be challenged because of lack of uniformity of interpretation, both by workers and by respondents, in the several States. This can be licked only in part by use of localized instruments, and at the

expense of weakening generalizations for the region.

Then, too, we can get involved in so much regional work that our work in the State suffers. We have to keep in mind where our primary duties lie, even when we are aware of the greater potential contribution of our regional involvements.

Finally, there is the disturbing possibility of State indifference to results of a regional study, particularly when there was no valid State sample, but also when the State had no great amount of interest originally but went along for the sake of regional solidarity. Unless the research problem is a universal one throughout the region, this situation is quite likely to occur. This argues for selecting regional research projects with attention to needs of all States involved rather than in terms of pet interests of researchers.

Section VI.

ORGANIZING FOR EXTENSION RESEARCH

EXTENSION RESEARCH AT IOWA STATE UNIVERSITY

George M. Beal

I perceive my role here as one of reporting how extension research is organized in Iowa. Therefore, I will confine my remarks mainly to what is - not to what ought to be. Although it is possible that the what is and the what ought to be could be one and the same, my remarks will not be cast in this evaluative framework.

What extension research in Iowa is, of course, is a result of institutional organizational structures, administrative policy and personnel, present research personnel, additional forces generating research demands, and the resources available - both financial and personal.

One place to begin would be to attempt to set the atmosphere or climate within which extension research is conducted. To attempt to communicate to you this atmosphere, may I quote from Associate Director (in charge of Extension) Marvin Anderson's presentation given last year at the Annual Extension Conference:

> .....In my twenty-some years in Extension, one of the most frequently mentioned gripes has been some reference to those daily, monthly and annual reports. I doubt that this would be true, if we used our reporting mechanism as a method of evaluating our own individual effectiveness rather than as a means of justifying our existence to our administrators or to Washington. The number of letters written, the number of telephone calls, etc., etc., are better indices of the needed secretarial services rather than the accomplishments by a professional staff of educators.....
>
> I have the feeling that part - if not most - of a quality appraisal can come from more analytical and objective evaluations of our program. In other words, research. We know that different activities require different kinds and amounts of information and study.....
>
> ...It may be of interest to you that, currently, we are spending over $12,000 per year (to research) carefully thought-out experiments in Extension. The five-year Farm and Home Development Study was a $120,000 budget. I am sure that this is a wise expenditure to get at the quality aspects of our program.

Though this statement does not in any sense describe the total climate in which extension research is conducted, I believe it is quite indicative.

Structure and Personnel

Again I will approach this from what is. That part of extension evaluation which is officially designated as research is carried out by a person who devotes one-fourth of his time to extension research. The remainder of his time is divided between experiment station research (half-time) and teaching (quarter-time).

Administratively, the extension research worker is a rural sociologist who is a member of the Department of Economics and Sociology. However, in practice, his one-fourth time in extension research is most directly comparable to a staff position attached to the office of the Associate Director of Extension. One-fourth of his salary is paid by the Associate Director of Extension through the Economics and Sociology Department budget.

To date, additional professional personnel directly assigned to extension research have come from three main sources: (1) Personnel hired for specific research projects, (2) permanent staff doing graduate work on extension fellowships, and (3) permanent staff members assigned part-time to specific projects. Additional statistical, clerical and field workers are contracted for on a project basis.

Types of Investigation in Which the Extension Research Worker Engages

In Iowa there is a concern about duplication of research efforts in Extension and the Agricultural Experiment Station. Thus, the question of the definition of areas of work for the extension research worker has been explored at length with administration, and certain operational areas of legitimate investigation have been agreed upon.

For communicative purposes the enclosed diagram (see diagram 1) of types of investigation relevant to the delineation of legitimate areas of extension research is presented. No claim is made that this is the most sophisticated model for classifying types of investigation; its purpose here is purely to improve the possibilities of communication.

Diagram 1. Types of Investigation - Functional Model for Communication Purposes

Basic-research	Research	Studies	Surveys	Informal
Testing and/or generating general level theory	Testing and/or generating lower level theory or specific hypotheses	More specific answers to specific problems - some analytical, some descriptive	More limited answers to specific questions, in some cases "educational" objectives	More casual "random" observation

There appear to be four main concepts that are involved in describing the area of investigation and the role of the extension research worker: (1) The type of investigation presented in the diagram, (2) the expected practicability and immediacy of application of research results, (3) the universe of investigation, and (4) the role of the extension research worker - from direct authority and responsibility, to research consultant, to more general consultant or interpreter of existing theory and principles.

Using this model as a point of departure, the main roles of the extension research worker are seen as follows:

1. Investigation, mainly in the areas of research and studies. This does not imply that extension research cannot make contributions to general level theory or basic research. The universe of study should be that of existing or proposed

extension activities. There is concern that the investigation will have relatively immediate and practical application to extension situations.

The extension research worker is directly responsible for the carrying out of this type of research. In contrast, research in the Experiment Station is mainly basic-research or research, not limited in any sense to extension activities as a universe of study, and less likely to be concerned with immediate practical application.

Two major extension projects in this area at the present time are: (1) The Farm and Home Development Study and (2) the Program Planning Project.

2. Pioneering role in studies, usually initiated by supervisory or county staffs, that appear to have special significance to Extension and to be the type of study that other supervisory or county staffs probably will want to replicate or modify and carry out. In this case, the extension research worker plays an active role at all stages of the project - development, methodology, analysis, and interpretation.

It would be impossible for the extension research worker to contribute these kinds of resources in replicating similar studies in other counties. However, resources are allocated to initial projects of this type to provide a general pattern of research methodology and analysis and to determine the feasibility (in terms of the amount of resources needed and results) of this type of study for other counties.

Two specific examples of this type of role in Iowa at the present time are: (1) A study of senior citizens in Clarke County, and (2) land resource utilization, with emphasis on the potential for optimum fertilizer use, in Des Moines County.

3. The consultant role on project planning, methodology and analysis on a number of other studies and surveys. However, in these cases major responsibility for the investigation rests with the supervisory and county staffs.

Examples of the playing of this role are: (1) Evaluation of the contribution of 4-H Club work to club members enrolled in club work in Henry County in 1953-56 and (2) determining the adequacy of 4-H objectives and activities in Marion County. In the latter case both adult 4-H leaders and 4-H members were involved. The intent of this study was to broaden the horizons of adult leaders to possible objectives and activities for 4-H work - the purpose was mainly educational but with a secondary objective of data gathering.

4. The consultant role with administrative and field staff. In this role little new empirical research is initiated. The function performed is largely that of interpreting existing theory and specific studies to provide a basis for making administrative decisions or planning existing or new programs. This role is played on a continuing basis with administrative, supervisory, specialist and, in some cases, county staffs.

Two specific examples of this role being formalized are: (1) Serving on the committee planning the objectives, organizational structure, and methods for the Community and Area Resource Development Program and (2) member of the content and operations committee for planning and carrying out the Iowa Future Series this year which involved some 60,000 Iowans in self-administered discussion groups.

5. Coordinating role in research involving extension research and the Agricultural Experiment Station. For instance, two joint projects involving extension research and the Experiment Station are now being carried on: (1) Certain aspects of the Farm and Home Development Project and (2) the Experimental Fertilizer-Agricultural Chemical Dealer Training Project.

A footnote to the delineation of areas of responsibility should be added. All investigations involving the evaluation of the effectiveness of training activities are the responsibility of the training specialist, as a staff person attached to the office of the Associate Director in charge of Extension.

Role Relationship of the Extension Research Worker to Other Extension Personnel

Administratively, the extension research worker is placed in the Department of Economics and Sociology. The placing of "specialists" in the department of their discipline is the rule in Iowa. These people are also budgeted by Extension through the department. However, in work practice, the extension research worker does perform a staff function for the Associate Director in charge of Extension. Since only one-fourth of the extension research worker's time is in extension research, the present arrangement makes practical administrative sense and works very well.

In this "staff" function role the extension research worker has relatively wide latitude for independent authority and responsibility for the more basic research and study type of investigations. However, in all cases to date, he has operated with committees representative of administrative and supervisory personnel.

For any investigation or consultant activities carried on in the counties, the extension research worker works initially through the supervisory teams. Continued work in a county will be with the supervisory teams or, at the suggestion of the supervisors, directly with county staff.

The training specialist is often on advisory committees. If not, informal liaison is maintained on most investigation activities.

Since the extension research worker is also on the experiment station staff, role relationships with Experiment Station are easily maintained.

The Federal Extension Service, Division of Extension Research and Training, has been involved in several of our projects either on a formal relationship or consultant basis. These personal relationships have proven to be very valuable. Now, if they ever had any money to provide for cooperative research, the relationship might be even more fruitful.

Regarding the relationship with the Budget Bureau, I will have to be very frank. We have found this relationship to be very frustrating. First, there does not seem to be an attempt to understand the type of research that deals with the study of organizational bureaucracy or values, attitudes, or knowledge. Secondly, the Bureau has gone beyond what I perceive to be its stated function in its attempts to exert control over specific areas in schedules. Frankly, whenever possible, we will choose projects in which there is no possible involvement with the Budget Bureau. Paul Jehlik, of the Office of Experiment Stations, has been of great value in helping us in our meetings with the Budget Bureau.

Our research program has involved outside relationships with two outside organizations - the Kellogg Foundation and the National Plant Food Institute. In both cases relationships have been very good.

Policies and Procedures for Initiating Extension Research Projects

There are a number of points of origin of extension research projects. I will mention those that have been responsible for the generation of most of the projects in the past.

1. The Extension Studies Committee This is a committee that has been chaired by the extension research worker. It is composed of extension administrative, specialist, supervisory, and county staff members. The members review current extension research projects and make recommendations, with priority ratings, for needed extension research. These are then discussed with top extension administration and decisions are made regarding their implementation. Most of our larger and more basic research and study investigations have been recommended initially by this group.

2. Extension Administration Several projects have been requested by administration - in the persons of the Associate Director in charge of Extension, the assistant directors in charge of agriculture and home economics, and the leader of 4-H work - and subsequently initiated.

3. Individual County Staffs or Staff Members Ideas from these sources reach the extension research worker through the supervisory channel. Often, it is difficult to determine if the original idea was proposed by county staff or supervisors.

4. Extension Graduate Fellows Sometimes, extension graduate fellows, who are pursuing their degrees on extension fellowships provided by extension administration, propose specific projects that fall within their areas of interest.

5. The Extension Research Worker While he plays a role in all of the above methods of initiating, on occasion he will attempt, through "devious" routes, to secure approval for specific research proposals that he believes are important.

In all of the above cases, any project involving commitment of any sizeable amount of money (over $1,000) or extension research worker's time (over 25 percent of his extension research time) is cleared with the Associate Director before the project is undertaken. In most cases, the Associate Director will involve his assistant directors, the leader of 4-H, and often key supervisors in his decision.

Budgets

There is a gentleman's agreement between the extension research worker and the Associate Director of Extension that there will be available up to $2,000 a year to be used at the discretion of the extension research worker. Any additional expenditures are negotiated on a project basis as part of specific budget proposals.

What Ought to Be

In the suggested outline for this presentation, Emory Brown raised three questions that must be cast in the "what ought to be" framework. The opinions

expressed will be strictly my own and do not, necessarily, represent administrative policy.

1. Should extension research be an integral part of the extension organization?

Within the context of the definition of extension research used in this paper, my answer is "yes." As a staff function, I believe it can be creative, competent, and objective. This assumes, of course, you are working with an extension administrator and staff that want you to be creative, competent, and objective. I believe we can make this assumption in Iowa.

2. What is the optimum relationship between the position of extension training and extension research?

To me, in the ideal, these are two separate and distinct functions. "Informal evaluation" in the training situation certainly could be the prerogative of the person in charge of extension training. However, research, studies, and surveys should be carried out under the direction of the extension research worker. I would also apply this generalization to the area of investigating the effectiveness of training.

3. How should the budget be determined for extension research?

I am probably biased by past experience. The basic extension research personnel should be in the regular budget. There should be a minimum "current expense" budget ($2,000 to $5,000) to be used at the discretion of the extension research worker. Other monies should be budgeted on a project basis at the discretion of the extension administration. In Iowa, I can honestly say that any proposal that I have considered reasonable has been acted on affirmatively by extension administration. Perhaps, not always in the year proposed, but without undue delay.

A Final Word

Most of the discussion in this paper has been of what is. There should be no implication that this is the ideal, or that what apparently is working for us would work for other States. As the role of extension research meets with increasing acceptance and it begins to play a more important role, changes will have to be made in many aspects of the present organization. At the present time, however, I would rather see these changes worked out as the demand arises within the permissive administrative atmosphere that exists than formalized on a projected basis.

HOW EXTENSION RESEARCH IS ORGANIZED IN OHIO

Robert M. Dimit
Leader, Extension Research
The Ohio State University

Ohio Philosophy of Extension Research

The topic for discussion is "How Extension Research is Organized in Ohio." Before getting into the organizational structure itself, I feel that it would be desirable to present some of the major points involved in Ohio's philosophy with regard to extension research.

We regard extension research as an integral and essential part of our total extension program development and improvement processes. We believe that application of the scientific method to the program planning, program execution, and program evaluation processes will result in improved quality and effectiveness of our extension program. Knowledge and application of the scientific method by our extension personnel will enable them to do a more effective job as professional persons giving leadership to educational programs. We believe that, with guidance of persons trained in the field of research, our staff people are capable of applying the scientific method in their specific areas of responsibility.

We visualize this scientific method as being applied with varying degrees of rigor, ranging through a continuum that has "simple observation" at one extreme and "basic research" at the other.

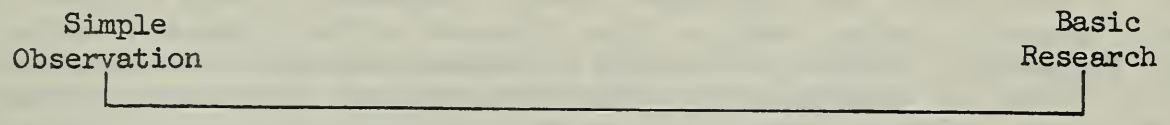


Figure 1

We conceive of basic research as research of the type done by the Experiment Station and by persons rather thoroughly trained in research methods, We do not visualize all of our extension personnel becoming thoroughly trained in research methods and capable of conducting basic research. However, we do see the importance of moving those presently at the level of "simple observations" toward the center of the continuum, in terms of their ability to apply the scientific method to their extension responsibilities.

With this brief statement of philosophy of extension research in mind, let's move to the responsibilities and duties of the extension researcher in Ohio.

Responsibilities and Functions of Leader, Extension Research

The following are statements of the functions and responsibilities of the Leader in Extension Research, as presented in the Ohio Extension Guide. The State Leader, Extension Research:

1. Is responsible to the Assistant Director, Training and Research, for the initiation, development, and coordination of needed extension research pertaining to program analysis, methods, and procedures in conducting the extension educational program in Ohio.

2. Cooperates with research staff of the College and the Experiment Station in identifying and conducting needed basic research projects pertinent to improvement of the extension educational program.

3. Counsels with extension personnel on proper research procedure for conducting special problems and other studies pertaining to the extension program, methods, and procedures.

4. Counsels with extension personnel doing graduate work on problems dealing with research in extension education.

5. Cooperates with the Leader, Extension Training, in developing and conducting needed training in the evaluation of programs, methods, and procedures.

6. Keeps the total staff informed of up-to-date research findings pertinent to improving the extension educational program.

Responsibilities and Duties of Leader, Extension Research, as Incorporated in Program and Plan of Work

The research position in the Ohio Cooperative Extension Service is organized around three main purposes:

1. To work closely with extension personnel on the county level, providing guidance and consultation to those interested in making studies of their extension programs, procedures, methods, and results.

2. To initiate desirable servicewide studies, as indicated by Extension Administration, dealing with areas, such as supervisory or administrative procedures, overall patterns of programing, and specific methods or results of programs on the State level.

3. To work within the experiment station framework to help initiate and supervise basic research studies, such as "The Clientele of the Extension Service, Their Needs and Interests;" "Effective Channels of Communications;" "Administrative or Supervisory Roles and Relationships;" "The Effectiveness of Extension Methods and Results;" and "The Influence Upon the Agricultural and Rural Areas of Social Change Processes, Such as Population Increases, Industrialization, and Urbanization;" etc.

Relationships of Leader, Extension Research to Internal and External Extension Groups

In the Ohio organization the position of Leader, Extension Research, is an integral part of extension administration. The Leader of Extension Research is a member of the Administrative Cabinet which is comprised of the Director of Extension, the three Assistant Directors, the six State Leaders, four District Supervisors, and the Extension Editor. (Figure 2)

This group meets twice a month to discuss current developments in our extension operations and to consider future plans for the extension program in Ohio. This provides an opportunity for the exchange of ideas among the members and the presentation of recommendations by any of the members, and furnishes guidance in and development of many of the policies and procedures for extension work in Ohio.

State staff conferences are held once each month with all administrative personnel, supervisory personnel, and specialists in attendance. These conferences provide opportunities for disseminating information and policy decisions among,

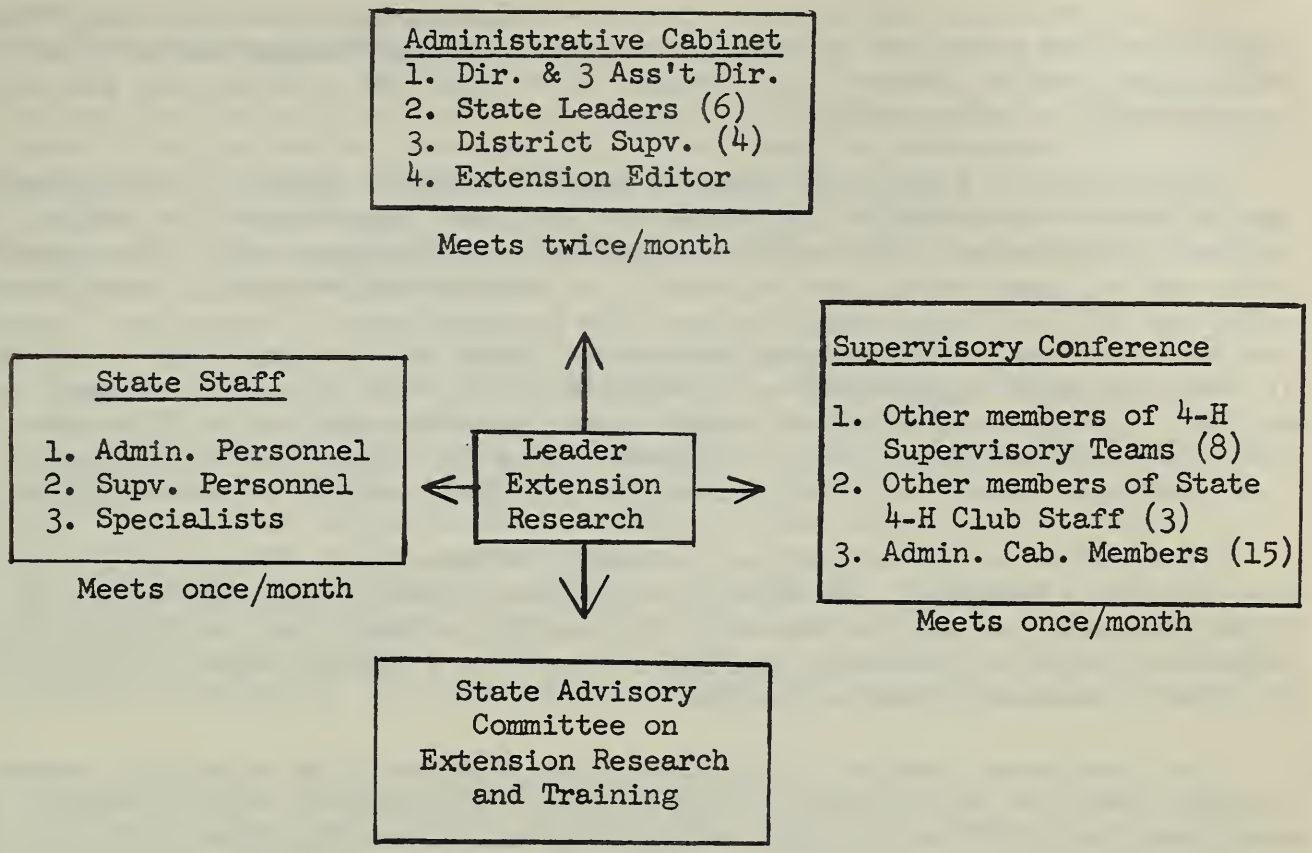


Figure 2.

presenting recommendations and suggestions to, and initiating training with, the State staff.

In addition, a supervisory conference meets each month, at which time members of the Administrative Cabinet, the four supervisory team members, and members of the State 4-H Club staff meet to consider matters of interest relative to supervision in the Ohio Extension Service.

As a member of these three groups, the Leader in Extension Research has an opportunity to suggest various needs for research, to secure and provide guidance and counseling in the development of research, and to acquaint members at the State level with current research developments.

The fourth group indicated in the diagram is the State Advisory Committee on Extension Research and Training which includes members of both internal and external extension groups in its membership. A complete statement of the organization, functions, and plan of operation for the State Committee on Extension Research and Training will be found in the appendix to this paper.

The purposes of this advisory committee are:

1. To study, review, and evaluate the existing extension program, in relation to the needs of the people and staff, and to make recommendations for long-time extension training and research programs.
2. To serve in an advisory capacity to extension administration by providing counsel and recommendations for integrated and continuing extension training and research programs at all levels within the organization.

3. To continue, and improve, the two-way channel of communication through which suggestions and questions concerning extension training and research of all staff members may receive proper consideration by a committee representing all levels and areas within the organization.

Membership in this group includes county extension agents, State extension specialists, communication team members, extension supervisors, and general representatives of Extension, plus ex-officio members and representatives from other departments and colleges within the University in an advisory capacity. Within the structure of this State committee are four subcommittees: Preservice, Inservice, Graduate Training, and Extension Research. These work in the areas of their responsibilities and make suggestions or recommendations to the general committee for improvement and further development of training and research programs in Extension. This organizational structure provides opportunities for county level personnel to introduce problems, needs, and recommendations for the extension research program.

In addition to our extension personnel, we also involve representatives from Home Economics Research, the Bureau of Business Research, and the Bureau of Educational Research, as well as research persons in the Department of Agricultural Economics and Rural Sociology and other departments who may make a contribution to the total extension research program.

The Associate Director of the Experiment Station is an ex-officio member of the central committee and a member of the research subcommittee. This provides an excellent basis for developing understanding and exchanging ideas mutually beneficial to the Extension Service and the Experiment Station. In addition, the State Leader of Extension Research has an appointment on the experiment station staff, through the Department of Agricultural Economics and Rural Sociology, thus providing better integration of the research activities of both agencies.

Optimum Relationship Between Extension Training and Extension Research Positions

The relationship which one considers to be optimum will, of course, depend upon the organizational structure in which the research position exists. These two roles emphasize the differences in background and training requirements. The position of Leader, Extension Training, calls for a person with a background in educational philosophy and educational methods. The position of Leader, Extension Research, calls for a person trained in the scientific approach and research methodology.

It is difficult to find a person with adequate training in both areas. Even if it were possible to find a person adequately trained in both, the nature and scope of each area would place a limitation on the effectiveness of one person handling both responsibilities. We feel we have an optimum situation in Ohio with two leaders, one in training and one in research, both reporting to the Assistant Director of Training and Research. This provides for effective coordination of the two roles, as well as effective representation at the top level of extension administration.

The three of us are housed together in the Office of Extension Research and Training, thus providing effective opportunities for interaction and coordination of activities. Since extension personnel include both men and women, we feel that having a woman as State Leader of Training and a man as State Leader of Research makes for a very desirable situation.

Should Extension Research be an Integral Part of the Extension Organization?

While there are advantages and disadvantages to extension research being an integral part of the extension organization, I feel that the advantages far outweigh the disadvantages. Of course, there are many extenuating factors related to this statement. Some of these are how the position fits into the formal structure of the State Extension Service, the attitude of extension administration toward extension research, and many other similar factors.

Being an integral part of the extension organization in Ohio provides for a degree of acceptance and the basis for a free flow of information concerning needs, interests, and problems, which members of the organization might not feel so free to discuss with someone who is considered an "outsider." The fact that the Leader of Extension Research is an integral part of the organization increases the prospect that research findings and action decisions based on them will be more readily accepted by administrators of the organization. With the research position as an integral part of the ongoing extension program, securing the necessary budget to conduct research activities becomes less of a problem than would be true if an outsider were conducting the research. This also makes it possible to conduct research projects needed by Extension, but not consistent with the experiment station type of research.

When it comes to the question of where the extension research position should fit into the formal structure, I would say that the only place where it can fit in most effectively is at the level of administration. This not only makes it possible to conduct research at all levels of the organization, but also provides the necessary legitimation and operational mechanism for implementing actions indicated by the results of the research.

I would say, in addition, that it is very desirable to have an appointment with the Experiment Station, since research and many basic problems of Extension will call for the experiment station approach. An appointment on the experiment station staff provides entre and a degree of acceptance when working with experiment station personnel from the various subject-matter departments. Extension research conducted by a person completely outside the organization, and entirely through the experiment station framework, tends to reduce the opportunity for making extension research and evaluation an integral part of the program planning and execution process.

Policies and Procedures for Initiating, Designing, and Carrying out Extension Research

Basically, the policy is that extension type research will be carried out under the direction of the State Leader of Extension Research in cooperation with the Assistant Director of Research and Training. Research requiring the basic approach of the Experiment Station will be developed with experiment station personnel in the appropriate subject-matter departments. The Leader of Extension Research will serve as consultant to the project, but project leadership and execution will be handled within the framework of the Experiment Station, and reports of the research will be made through normal experiment station channels. Projects being done wholly within the extension framework will be included in the program and plan of work and will be reported in its annual report of results by the Extension Research Section.

Initiation of extension projects may occur at any level within the organization. The research design is developed by the State Leader of Extension Research working with the personnel involved in the project. In the case of projects being conducted at the county level, we strive to involve the county staff member as leader of the project and attempt to use local people in carrying out the project, insofar as possible. In this case, the State Leader of Extension Research serves in a consultant capacity to the project, both in designing and conducting the project and in developing the analyses and reporting the results. In the case of most statewide projects, or research requested by extension administration, the State Leader of Extension Research and the Assistant Director of Research and Training function as project leaders and carry out all aspects of the research project.

The budget for extension research is developed in the same manner as budgets for other areas of the extension program. Each year we submit to the Assistant Director of Finance and Personnel a budget request based upon our needs as we see them at the time. Insofar as possible this request budget is broken down by specific projects. This applies only to the statewide projects, as the counties provide financing for their own county studies. The method of handling funds is such that, should more urgent projects develop during the year or should additional projects be desired by administration, these funds can be shifted from one area to another to handle the situation. Up to the present, this system of determining budget has worked out very well.

The nature of the topic assigned and the time allotted have required that this presentation be a brief one done in rather a summary fashion. However, I hope this has given you some understanding of the organization, duties and responsibilities related to the role of Leader, Extension Research, in the Ohio Cooperative Extension Service.

APPENDIX

THE ORGANIZATION, FUNCTIONS, AND PLAN OF OPERATION OF THE (OHIO) STATE COMMITTEE ON EXTENSION TRAINING AND RESEARCH

I. Statement of Purposes

A. To study, review and evaluate the existing extension program in relation to the needs of the people and staff and make recommendations for long-time extension training and research programs.

B. To serve in an advisory capacity to extension administration by providing counsel and recommendations for an integrated and continuing extension training and research program at all levels within the organization.

C. To continue and improve the two-way channel of communication through which suggestions and questions concerning extension training and research of all staff members may receive proper consideration by a committee representing all levels and areas within the organization.

II. Organization, Membership, Plan of Operation

A. Continuity of membership will be provided by establishing a rotation system on a four-year basis. As a way of initiating the rotation system, members will start out serving a two or four-year term as indicated. As subsequent replacements or new members are added, they will be appointed for a four-year term.

B. The selection of new members to replace those whose terms expire will be left in the hands of the groups or associations they represent. New members will be selected in consultation with the Extension Training and Research Office.

C. County agents' representatives will be: 2 men, 2 women. The County Agents' Association President will automatically serve as ex-officio member.

D. The trainer agents' representatives will be: 1 man, 1 woman.

E. The Extension Specialists' representative will be: 1 man, 1 woman. The Chairman of the Extension Professors' Association will serve automatically as an ex-officio member.

F. The Supervisors' representatives will be: 1 man, 1 woman.

G. The communications teams' representatives will be: 2 men, 2 women. (These are persons who have attended communication workshops.)

H. Extension Administration will include the Director; Assistant Director, Programs; Assistant Director, Personnel; Agricultural Editor; State Leader, Extension Research; State Leader, Extension Training; State Leader, Home Economics; State 4-H Leader; and State Leader, Agriculture, Farm and Industry.

I. Four subcommittees organized as follows: Preservice training, inservice training, graduate training, and extension research.

J. The subcommittees will assume full responsibility for submitting recommendations concerning the action phase of the programs. Tentatively, subcommittees will report twice a year to the general committee, once in the fall and once in the early spring.

K. It will be the responsibility of the subcommittees to study and make recommendations in those areas suggested by the general committee and to suggest methods for improving and further developing the training and research programs in these areas. The general committee will have the function of advising, encouraging, supporting, and making recommendations for further action or disposition of findings and recommendations on the subcommittees.

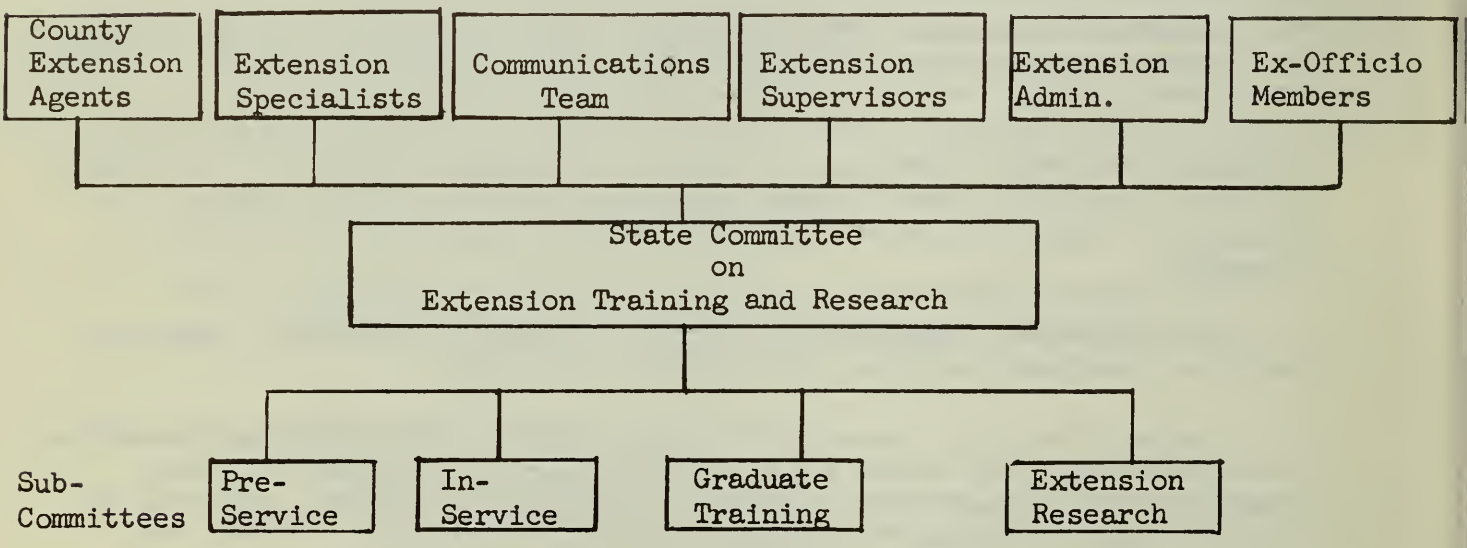
L. Members of the Advisory Committee will be asked to serve on the subcommittees. Care should be taken to avoid having members of the Advisory Committee use the subcommittees on which they serve as pressure groups that would inhibit the coordinating function of the Advisory Committee.

M. The full composition of each subcommittee will be worked out by the Extension Training and Research Office. Selection on the subcommittee will be made honoring the choices of each person, insofar as possible. In addition, members from a wider representation of the University will also be selected to serve as resource persons on these subcommittees.

N. Ex-officio members consist of: Director of Extension; Associate Dean of Resident Instruction (College of Agriculture and Home Economics); Associate Dean and Director of School of Home Economics; Associate Director of Experiment Station; Chairman of Ohio County Extension Agents' Association; and Chairman of Extension Professors' Association. They will meet with the general committee and subcommittee according to need and available assistance.

O. Assistant Director of Research and Training, State Leader of Training, and State Leader of Extension Research will work with all subcommittees providing leadership and guidance.

III. Schematic Diagram of the State Committee on Extension Training and Research



RESEARCH IN COOPERATIVE EXTENSION WORK AT THE UNIVERSITY OF WISCONSIN

Patrick G. Boyle
Department of Agricultural and Extension Education
University of Wisconsin

I know of no better or more effective way of introducing what I have to say than to refer to a statement made by our Associate Director, Henry L. Ahlgren. To me, it reflects the philosophy toward "Research in Cooperative Extension Work" at the University of Wisconsin, and identifies the field about which we are speaking. I quote:

> Research can also be used by the Cooperative Extension Service as the master to provide basic facts needed for self-improvement and greater effectiveness. In general, our various programs have 'grown like Topsy' and the 'scientific method' has not been applied along the way. We cannot delay much longer the initiation of new studies or the expansion of studies now underway, that will provide the answers or point the way to the solutions of some of the problems in administration, supervision, program planning and execution, communications, group dynamics, human relations, and many others with which we are now confronted. I am not proposing that we undertake such a research program ourselves. It seems to me that to be most effective, it should be done by the State Experiment Stations, in cooperation with the State and Federal Extension Services. I am convinced, however, that in skillful and understanding hands, research can be made to serve just as effectively a master in planning and executing our various programs and in guiding our course as it has as a servant in providing the educational material on which our current programs of work are based.1/

When I refer to "Research in Cooperative Extension Work" or "Extension Research" in this paper, I'm referring to studies related to the administration, supervision, planning, and execution of the cooperative extension program. With this as a conceptual framework I have organized my specific remarks about extension research around four questions.

1. Who does research in cooperative extension work at Wisconsin?
2. How is an extension study initiated?
3. What kinds of extension studies are being pursued?
4. What relationships exist between the extension staff and staff members doing research in Extension?

First, I will consider the question: "Who does research in cooperative extension work at Wisconsin?" In attempting to describe the institution's organizational structure within which extension research is carried out, it is appropriate to say that there are no administrative boundaries at Wisconsin to hinder the person

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1/ Talk presented at Land-Grant Meetings, Washington, D. C., November 16, 1954.

interested in pursuing research in this field. However, as was indicated in Director Ahlgren's quote, there are many complex problems in cooperative extension work to which the scientific method has not been applied.

It is Wisconsin's philosophy to generate a degree of interest and activity in extension research which is commensurate with the problems of extension work. We believe isolated and sporadic efforts are not enough to assure solutions to these problems. Therefore, our people are pursuing projects in the departments of Agricultural Journalism, Rural Sociology, Agricultural Economics, Agricultural and Extension Education, Home Economics Education and Extension, in the School of Education, in the School of Commerce, and in the National Agricultural Extension Center for Advanced Study. Staff members in these units of the University who are conducting extension research may have single or joint appointments involving any combination of teaching, research, and extension duties.

The University of Wisconsin is aware that extension programs and processes must change to meet changing needs, and it is equally confident that appropriate and skillfully conducted extension research can make profound contributions to extension work.

The National Agricultural Extension Center for Advanced Study located at Wisconsin was developed not alone to give advanced training, but also to facilitate and conduct research in Extension. Ninety-four students have completed research studies as part of their graduate training in the Center. In addition, each staff member is conducting a longitudinal study relating to some phase of cooperative extension work. Some of the Center fellows have selected parts of these longitudinal studies for their own research projects. Special research projects are also conducted by the Center, such as the study of "The Organization and Operation of Extension Marketing Programs in Selected States."2/ This study was completed by Drs. Wendell Earle and Jean Evans for the marketing subcommittee of ECOP.

Findings from extension research conducted at the Center are distributed to all the States and to the Federal Extension Service. In addition, they are being used in courses on campus and in seminars and workshops conducted by Center personnel throughout the United States.

In keeping with the purpose of graduate study, students working on graduate degrees play a prominent role in research in cooperative extension work at Wisconsin. Currently, there are well over 100 graduate students scattered throughout the University who are conducting various kinds of extension studies under the guidance of staff members. The majority of these students are located in the National Extension Center or in the Department of Agricultural and Extension Education.

At Wisconsin, the graduate program, leading to degrees in Cooperative Extension Administration or Education, is interdisciplinary in nature. Through such a program the needs and interests of the student become major factors in determining his program of courses and his research project. I could cite many examples of such interdisciplinary arrangements but, because of time limitations, will mention only one.

2/ Earle, Wendell and Evans, Jean, "The Organization and Operation of Extension Marketing Programs in Selected States." National Agricultural Extension Center for Advanced Study, University of Wisconsin, 1957.

As an example, Lawrence Biever completed the Ph.D. degree in Extension Education through the Department of Agricultural and Extension Education with Dr. W. T. Bjoraker serving as chairman of his graduate program. Professor E. A. Wilkening of the Department of Rural Sociology served as his major research advisor, since his study was part of a larger "role perception" project being conducted by Professor Wilkening.

From the standpoint of the Cooperative Extension Service in Wisconsin, there are two other organizational factors which relate to extension research. First, an Extension Studies Committee is appointed annually by the Associate Director of Extension. Several disciplines, such as education, sociology and economics, as well as extension personnel, are represented on this committee. The committee's major responsibility is advisory in that it suggests and reviews proposed research studies and, subsequently, makes recommendations to extension administration for support and financial assistance.

I would like to emphasize that this committee is not an obstacle or roadblock to any staff member desirous of proposing a study to extension administration or the Experiment Station. Rather, it renders valuable service in planning and expediting extension research on problems confronting the Extension Service.

The second factor regarding the Cooperative Extension Service at Wisconsin is that there are three staff members who have joint extension-resident instruction appointments with responsibilities for planning and coordinating training activities for extension personnel. These responsibilities also include assisting extension administrative and supervisory personnel in conducting and interpreting extension research and in using it in training.

In the final analysis, extension research at Wisconsin is done by any staff member or student who recognizes a need or problem and has the interest and desire to design and pursue a study.

Now let me attempt to answer my second question: "How is a study in this field initiated at Wisconsin?"

Within the organizational structure in which extension research is conducted, the motivating force for initiating, designing and carrying out a study is the staff member himself, or the student under the guidance of his major professor. Any staff member has the opportunity to prepare a project proposal and submit it through administrative channels to extension administration or to the Agricultural Experiment Station, or both.

I would like to emphasize here that extension administration often suggests to individual staff members, or to a department, an area in which it would like to have some research conducted. An example was its request to the Department of Rural Sociology to study farm and home development work.

There are numerous extension research projects that have been approved by the Experiment Station, some of which have received financial support. Financial support has also been given to some projects by the Extension Service and, in some cases, by outside agencies through regular departmental channels.

In summary, the individual staff member is the motivating force for initiating and conducting a study in this field. However, extension administration often

requests that certain areas be studied.

I would like to answer the last two questions of the four around which I have organized my remarks by discussing three extension research projects that currently are in progress. As a result, I think you will become aware of some of the kinds of extension research and evaluation studies being conducted, as well as be able to identify role relationships that develop between administrative and county extension personnel and the researcher.

The first study has to do with 4-H Club work. In 1949, Professor Burton Kreitlow initiated a longitudinal study of newly-formed centralized school districts in Wisconsin. Professor Kreitlow holds a joint research-resident instruction appointment between the School of Education and the Department of Agricultural and Extension Education in the College of Agriculture. The purpose of his study is to determine whether or not school district reorganization has had a positive effect on education in the rural community. As data were gathered for the study, it was realized that, with a limited amount of new information, the data obtained would be of value for research in 4-H Club work. Thus, a study of 4-H members and nonmembers, regarding mental ability, school achievement, willingness to work and family background, was developed.

There is no need for close working relationship between administrative and county extension personnel and the researcher, Mr. Kreitlow, in conducting this project. However, extension personnel are extremely interested in the findings of this study and cooperate in advisory roles when requested to do so.

This is an experiment station project that has received financial aid and graduate student assistance from several sources, including the Graduate School, the School of Education, the Department of Agricultural and Extension Education, the Federal Extension Service, and the Office of Education of the U. S. Department of Health, Education and Welfare.

Thus, this study shows a staff member, who does not hold an extension appointment, doing extension research and receiving some financial aid for the project.

Now I draw your attention to the second study I'm going to review. About two years ago, a research project jointly sponsored by the National Agricultural Extension Center for Advanced Study and the Department of Agricultural and Extension Education was approved by the Experiment Station. The Center and the Wisconsin Cooperative Extension Service are contributing financial support for the project. This project is headed by Dr. Edgar Boone of the Center staff who holds a research-resident instruction appointment and myself, with an extension-resident instruction appointment.

In terms of purpose, this project is an attempt to research the process and results of county extension program development, with the overall purpose of devising means for improving county extension work through more effective program development. One phase of the project deals with the changes that occur to the program planning participants. Another phase deals with the evaluation of the process which occurs as the program is planned.

Just from this brief description of the purpose of this study, I'm sure you will conclude that there is a need for close working relationships among extension administration, supervisors, county agents and researchers, as well as the graduate

students who are involved in collecting and analyzing data. Because of the nature of this project and the nationwide responsibilities of the Center, it is planned that this study will be extended to several other States.

This is an example of two separate University units cooperating very closely with extension administrative and county personnel to study the processes of extension work.

Actually, a project like this is possible only if close, congenial working relationships are developed between researchers and personnel on the extension staff. The last example I will mention is a project initiated by extension administration. About a year ago, the Extension Director appointed a committee of two supervisors and a training specialist to study the amount of time county agents were spending out of the county in which they were employed.

This committee planned the design and procedures for the evaluation project. Supervisors collected data from county personnel. The training specialist analyzed the data and prepared the report. This report is now being used by the supervisors.

I cite this as an example wherein a large majority of extension administrative and county personnel were actively involved in conducting a study. I might also mention that a large number of activities, which I classify as training, have taken place in relation to the last two studies.

In summary, extension research at Wisconsin is done by staff members in a number of different administrative units. Administrative boundaries which might hinder anyone interested in pursuing a study in this field do not exist.

Administration frequently suggests to departments and staff members areas that need study. However, the recognition of a problem and the initiative and interest of a staff member are very important factors in designing and conducting specific studies in any area.

Recognizing that there are many complex problems relating to cooperative extension work, there are, of necessity, many different projects in extension research being conducted at Wisconsin. The University generally allows areas of concentration to develop out of interests of staff members and current problems and needs evolving from the extension process. The relationships that develop between the researcher and extension administrative and county personnel depend on the nature and needs of the specific research project.

Through this procedure for conducting extension research, the University of Wisconsin seeks solutions to the problems facing the Cooperation Extension Service, so that it may continue to exert profound influence as an educational agency.

HOW EXTENSION RESEARCH IS ORGANIZED IN MISSISSIPPI

H. J. Putnam
Leader of Extension Studies and Training
Mississippi State University

Creation and History of Research Project

An extension project was created in 1945 embodying extension research and training. It was thought that training extension workers and research in extension were so closely allied that they should be included in the same project.

At that time there was only one professional worker employed to do both training and research. About a year later a second person was employed with the understanding that one would work on training and the other on research. The present leader of this project was employed at that time with the expectation that he would give primary attention to training. At a later date, because of the resignation of one member, the project personnel was reduced to one person who has continued to serve since that time.

In the beginning, consideration was given to placing the project under or in the Director's office. But the final decision was that it would be set up as a regular extension project coordinate with the many other projects making up extension work in this State. The Director assumes no more responsibility for guiding extension research than he does for guiding the work in agronomy, clothing, or any other area of extension work.

The Role of the Extension Researcher in Planning and Conducting Research

The responsibility for extension research is not clearly defined at the present time. In fact, what is now being done has developed largely through individual interests rather than because of administrative direction. The nature of the particular research being done has had more to do with the placement of responsibility for doing it than has administrative guidance.

The several duties and responsibilities that have been placed on the extension researcher has imposed a definite limitation on the amount of time that can be devoted to extension research. As already has been indicated, the one person in the project at the present time has responsibility for both training and research. Other duties that have been placed on this person include teaching courses in extension education, training foreign nationals, processing county and State reports, and other miscellaneous duties. It is obvious, under this circumstance, that the amount of research that can be done is greatly limited.

Delegated Extension Research The widely dispersed responsibility is indicated by the fact that, at the present time, extension research is being done in several departments. The Rural Sociology Department of the Experiment Station conducts research dealing with community organization and development, the learning process, motivation, the influence of participating in community clubs on the acceptance of new practices, and similar problems. One reason for the fact that Rural Sociology is taking an active part in such research is that one of the members of the rural sociology staff serves as leader of extension rural sociology. His interest in this general area, and his connection with the rural sociology staff of the Experiment

Station, explain his active role in this connection.

Some years ago, the State agent in extension home economics, being somewhat interested in promoting research among the home agents and women specialists, appointed a committee of women specialists to have major responsibility for considering needs for research in this field and, in fact, for carrying on this kind of research. This committee has served more or less actively for several years and the State home demonstration agent has maintained a close contact with it. The committee has worked in close contact with research people in the Federal Extension Service, as well as with the extension researcher. Certain researches have been carried on under the general direction of this committee, with guidance from the Federal office and in close cooperation with the leader of the studies and training project.

The 4-H Club Department has initiated research dealing with 4-H Club work - how it is organized and conducted. In the initiation of such research, the need was first expressed by the 4-H Club Department. Various individuals, including the extension researcher, have been called in to help plan and carry it out. In some instances, the major leadership role was assigned to one individual; in other instances, it was assigned to some other person - depending somewhat on circumstances at the time, the nature of the research, and individual interests.

In recent years, the Agricultural Economics Department of the Extension Service has initiated research dealing with farm and home development, rural development and other aspects of rural economics. This research has been in close cooperation with and, in some cases, under the immediate guidance of the extension researcher. This work was conducted under the overall guidance of a small group or committee of interested members of the State staff. Necessarily, it involved many county workers who were doing farm and home development or whatever the research dealt with.

From time to time, members of the Information Department have been concerned with research in the use of mass methods of education and other methods of communication. At our institution the Information Department has primary responsibility for training agents in the use of mass media. The members of the department and, in some cases, radio and television stations have desired information as to the effectiveness of the several mass media, or other aspects of communication. In organizing and conducting such research, the extension researcher has assisted in the formulation of plans and, in some cases, in actually tabulating the data and writing the report.

County extension staffs or individual agents, who need information that is available only through research, may make this fact known to the extension researcher, or a district agent, or perhaps a specialist who may also be concerned. Whichever person is contacted in regard to such county needs, it is quite likely that, ultimately, the extension researcher will be involved in the endeavor.

The routing of these requests depends somewhat on the nature of the study. If it has to do with some technical agriculture or home economics problem, it may go through the appropriate specialist. If it deals with some aspect of extension education, it is likely to go directly to the extension researcher. The district supervisor may or may not be a party to the request for assistance for the county staff.

Examples of Needs for Research Assistance Last year the staff in one of the counties decided to do an extensive survey in the county to determine felt needs of

the people for educational services. The agents felt that such information from their public could be used effectively in developing extension programs - both long-time and short-time. Out of this interest on the part of the county staff grew a study that involved both county and local leaders, as well as State and Federal extension researchers. Much of this work, except the interviews, was done by the extension researcher.

Another illustration, showing how research needs arise and how they are directed, is one in which a home agent felt a need for information on the use of electricity in the homes of her county. She expressed such an interest to the rural electrification specialist who contacted the extension researcher for assistance in developing the plan. This assistance was rendered, the survey has been completed, and plans are in the making for tabulating the data and preparing the report. This piece of research was with the knowledge of the district agent, but without material assistance from her, the only parties involved in it being the home agent, some local leaders, the rural electrification specialist, and the extension researcher.

These cases illustrate the fact that the responsibility for doing research in Mississippi is widely dispersed. It is felt that the need for research in Extension should arise among those people who are to use the information obtained, and that, until they feel a need, perhaps no great amount of research should be undertaken. The extension researcher serves as a consultant to those who are interested in doing research and, in some cases, assumes the major role for organizing and conducting it. There is no uniform practice and, so far as can be observed at this time, no uniform practice is taking shape, nor is one desired. Extension research is a cooperative endeavor, as are other phases of extension work.

Relationships with Internal and External Groups

Inasmuch as the research and training project is one of many projects making up the Extension Service, all being coordinate in rank, the extension researcher does not direct others to do research. Nor does he initiate research without a need arising in the minds of others. Individuals within the Extension Service, who desire help regarding research, may call on the researcher for assistance, and oftentimes do. The extension researcher, in some instances, takes the initiative and counsels with others within the extension organization - specialists and supervisors - in regard to research needs. Out of these informal talks may or may not arise research efforts.

Rural sociologists or others in the experiment station staff, who may be concerned with rural problems, may consult the extension researcher in regard to such interests and, out of these conferences, may evolve a plan and a study. In some instances the extension researcher serves as a liaison between experiment station personnel and county extension workers who may be more or less involved in a study. County extension workers can aid materially in acquainting the people of the county with the undertaking and, in some cases, may render invaluable assistance in actually doing the field work. These county workers may also assist in interpreting some of the data and in otherwise making the findings more useful.

It is felt that the State extension researcher should be the center through which Federal extension workers move in cooperating with the State on Research needs. Indeed this is the operating procedure in our State. In some cases, the State researcher simply agrees to cooperate, while in others he assumes a major role. The degree of participation varies all the way from merely knowing about a piece of

research work to assuming major responsibility for organizing and conducting it.

Relationship Between Training and Research

As has already been explained, leadership responsibility for both training and research rests with the same person in Mississippi. It is not intended to convey the thought that no one else in the State extension organization plays any part in doing training and research. It has already been explained that both training and research are widely dispersed. It is admitted that, in some States and under some circumstances, training and research might well be entirely separate and that more might be accomplished if they were. However, they are so much a part of the same general purpose that one can hardly succeed best when it is entirely independent of the other.

The Place of Extension Research in the Organizational Structure

Before an attempt is made to react to this point, perhaps it is well that some explanation be made as to what we believe extension research is - at least what we are talking about when we use this term. Research can vary all the way from finding out which 4-H members will exhibit beef calves at a livestock show to, on the other extreme, determining the impact of contests and awards on 4-H Club members. Whether or not these are appropriate illustrations, the fact remains that research is done by everyone, although the more basic research must be reserved for the more highly trained and competent persons.

If we accept this conception of research, then we must conclude that extension research is likely to be of a service nature, while more basic research is likely to be conducted in the experiment station setup or by research agencies of the U.S.D.A. or similar research bodies. In answer to the question, then, as to where research should be placed, it seems that basic research might well be done by people whose full time is given to research and whose competency in research is likely to be far greater than that found among most extension workers.

There is a definite need for certain types of research that will be placed within the extension staff, probably assigned to the Director's office. It could be in a project as it is in my State, but would probably be best placed in administration. The interest of the individual director in research would probably have something to do with its placement.

Budget for Extension Research

In Mississippi there is no special budget for extension research. The annual budget includes the salaries, travel, and other expenses for the several projects, including, of course, the studies and training project. These items in the budget are not identified as research items. Individual members of the staff do such research as seems necessary and possible within the limitations of other necessary work. Ordinarily there is no additional allotment of funds during the year, if and when studies are initiated.

Under the administration of research by Experiment Stations, individual research project budgets would likely be necessary. If the responsibility for research is

placed in the Experiment Station, then the problem of budgeting would differ somewhat from our system where most extension research is done by regular extension workers who operate under extension project budgets rather than under research project budgets.

SOCIAL PSYCHOLOGICAL ASPECTS OF EXTENSION RESEARCH ORGANIZATION 1/

Murray A. Straus
Department of Child Development and
Family Relationships
Cornell University

During the past few days all of us have been saturated with the importance of empirical research as the proper way to conduct an evaluation of an extension activity. I suppose that if I had been on my toes, I would have spent this time, first, distributing questionnaires; and then, tabulating results so that I could stand before you at this time armed with the necessary statistics to give this paper scientific respectability. But, since I failed to practice what we have been preaching, I speak with some temerity.

Nevertheless, in the course of preparing for this meeting, I have come across some fascinating "research on research." Most of these studies concern chemists, physicists, physiologists - in fact, everybody except social scientists. Despite this, the findings of these studies have relevance for our own work, and one of my main objectives this morning will be to try and translate - or perhaps more accurately - extrapolate the findings of these studies into the context of extension research.

More specifically, there are four objectives which I shall try to accomplish in these comments.

1. To comment briefly on certain aspects of the four papers you have just heard.
2. To review empirical studies which show how the social structure of research (i.e., the organizational patterns) influences some key aspects of the type of research output, with particular emphasis on the consequences of within-extension conducted research vs research done by outsiders.
3. To review studies which show how certain personality factors are related to the type of research output.
4. To suggest some possible future organizational patterns for your consideration.

1/ I would like to express my appreciation to three persons whose generosity in making their materials available greatly aided in the preparation of this paper. Prof. Edward C. Devereux gave me access to unpublished papers of the "Bell Telephone Study" which he carried out with Robert K. Merton. Table 4 in the present paper is based largely on these materials. Prof. Leo Meltzer provided unpublished material from his study of physiologists and, in addition, made available his extensive collection of materials on the social psychology of science. Prof. Norman W. Storer let me use what was at that time a draft of his Ph.D. thesis, "Science and Scientists in an Agricultural Research Organization: A Sociological Study," from which I drew heavily in making up table 2.

COMMENTS ON PANEL PAPERS

About the only generalizations which one can make from the patterns of extension research organization described in these papers (and those you know of in other States) are first, that there is considerable diversity from one State to another, and second, that all the States view the Experiment Station as having a hand in research on Extension.

I have the feeling, however, that much of this diversity is merely the result of varying degrees of attention and support given to Extension, rather than a response to any special local situation or need; and that much of the experiment station work in the area of extension studies is not considered very crucial, though this also varies greatly from State to State.

Extension research in Mississippi - and probably in most of the States - reminds one of the early history of the Experiment Stations. As you know, the Experiment Stations used to combine research and what we now call Extension (True, 1925), which was then called demonstration work. But the conduct of this demonstration work interfered with the research activities, and this was one of the reasons for the creation of the Extension Service. It is interesting to note that, at the time, there was some opposition to the differentiation of the two functions on the grounds that the researcher was the best qualified person to communicate the new knowledge to the public. I mention this little bit of extension institutional history because a similar view is currently expressed regarding the most appropriate person to communicate to extension workers the results of extension studies. I will come back to this point later in talking about the question of combining the extension research and training function.

Ohio and Pennsylvania make provisions for a permanent and full-time research person, but the other three States represented by speakers here this morning do not, nor do most of the States. Some States, such as Wisconsin and Iowa, provide considerable financial support for research, but it is on an ad hoc basis. It is also interesting that none of the speakers mentioned a definite total sum per year spent on extension research. George Beal mentioned several figures, but one has the impression that more support for research is actually provided. I know that Wisconsin, for example, spends far more on extension research than ever appears on the books under that heading. This seems to suggest that research on Extension is not yet fully legitimized and institutionalized as a proper expenditure of extension funds.

Obviously, the lack of full legitimation may restrict the funds spent on extension research. But, probably more important are the indirect consequences which may follow from the semi-accepted status of extension research, and especially the handicap it imposes in recruiting research personnel. Recruitment efforts would be aided greatly if extension research were a field with a number of permanent career positions open to the prospective candidate. Only in such an institutionalized research atmosphere can a person know that, if something is wrong with one job, there are similar positions open elsewhere. Thus, he need not fear the loss of time and other professional commitments involved in learning to be an effective researcher in the area of extension studies.

On the other hand, a formal legitimized position also has its drawbacks, as I shall try to show more systematically later on, but which, for the present, is well

illustrated by figure 2 of Dimit's paper on the Ohio organization.

Examination of this chart shows that the Extension Research Leader not only attends the meetings of the committee on extension research and training, but also participates in the supervisory staff conference (which meets once a month), and the State staff meetings (also once a month), and finally is a member of the extension administrative cabinet (twice a month). According to my reckoning, which includes preparation and subcommittee time, the unfortunate incumbent of this position has to spend about four days a month, or some 20 percent of his time, on these general administrative meetings. Thus, his research time is cut automatically by one-fifth by this fact alone.

But that is enough of this sort of general comment. It is time to get on with a more systematic presentation of what is known about social structural and personality influences on research, and especially the implications of this knowledge for the specific type of research known as "extension studies."

SOCIAL STRUCTURAL DETERMINANTS OF TYPE OF RESEARCH OUTPUT

It has been two years since I have done anything which, even by the most liberal definition, could be called extension research, and I no longer consider myself a practitioner of this art. However, I accepted the assignment to prepare this talk because of a continuing faith in the importance of research in helping Extension meet the many changes now in process and the many more about to come.

I have something of the feeling of those major corporations which estimate that by 1975 half of the sales in their fields will consist of products which do not now exist. These firms, therefore, support not only developmental research, but also fairly basic kinds of studies, in the hope that they will turn up some of these new products and systems before their competitors do.

Fortunately, the field of adult education is not quite so competitive as industrial chemicals or machine tools. Just the same, I think the day is not too far off when only a small minority of Extension's audience will be farmers or rural people, and when half the present program content and teaching methods will be nonexistent. Awareness of this profound change should commit every extension director to a solid research program.

By "solid research program" I mean not only various evaluation and survey studies, but also at least some support for basic research which helps provide some of the information needed to effect this massive alteration in the extension program. There are, of course, those who argue that support of basic research is outside the legitimate scope of Extension, and I will deal with this question more explicitly toward the end of this paper.

The second reason why I was interested in preparing these comments grows out of having been trained as a rural sociologist, where the influence of organizational factors is strong (Anderson, 1959). I am convinced that the social organization of the experiment station system has exerted a profound, even though largely unintended, effect on the type of research rural sociologists do. Is there any empirical evidence which would confirm or refute these impressions?

I am sorry to have to report that a careful search of the literature has turned up nothing on rural sociology or extension studies. However, I am glad to report that this search did turn up a number of studies of other fields of research which, in their cumulative effect, leave little doubt of the powerful influence the social organization of research has on the type of research output. A selection of these studies is listed in the bibliography. If no other purpose is served by this paper, the mere bringing of these important studies to your attention may be sufficient justification for spending your time here this morning.

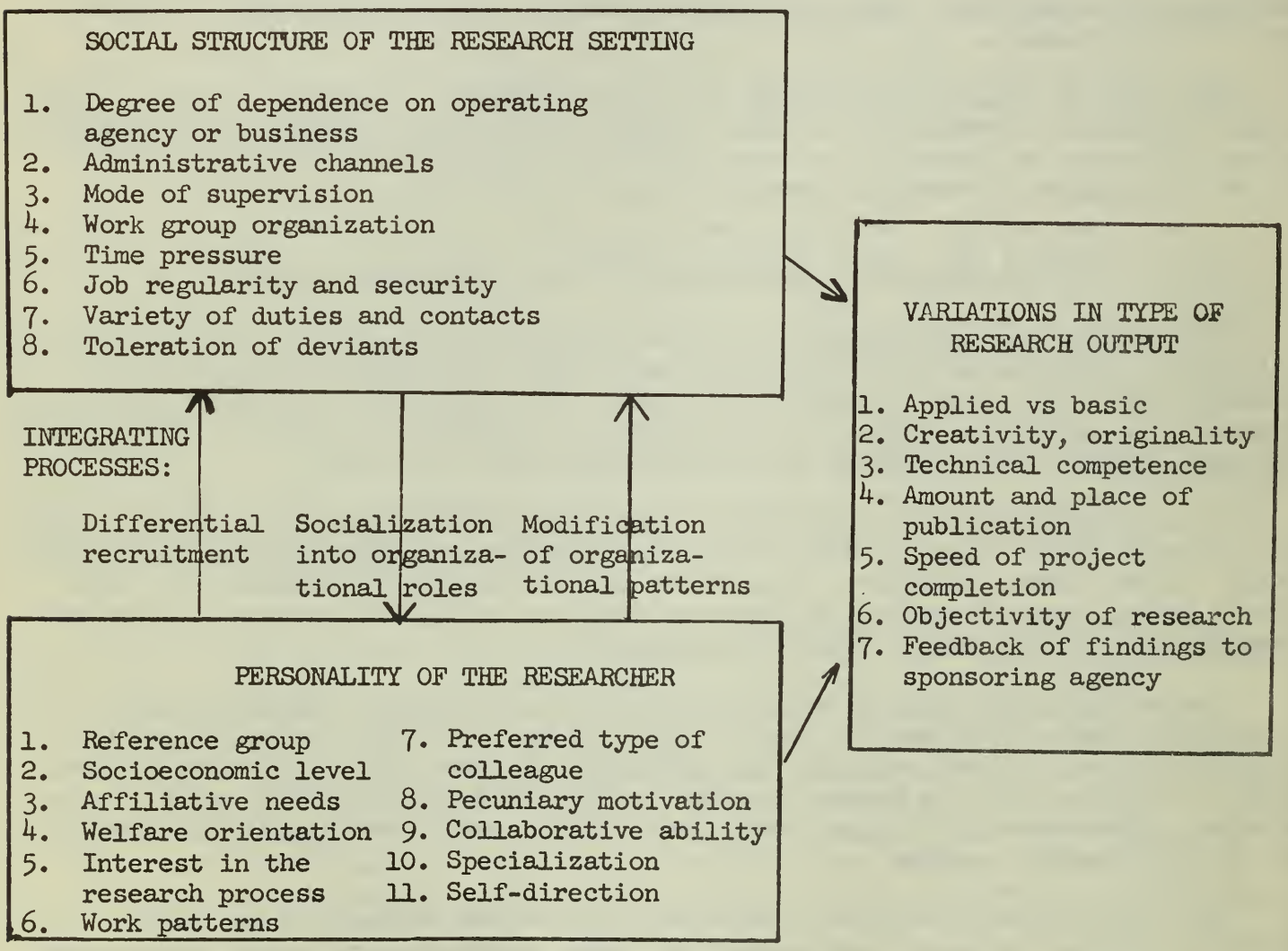

Figure 1. Some Structural and Psychological Determinants of Variations in Type of Research Output

First, let us look at figure 1 which is given the somewhat grandiose title of "Some Structural and Psychological Determinants of Variations in Research Output." This diagram is intended to give an overview of what I am going to say. The basic argument is relatively straightforward.

Usually we think of the type of research which is done as a function of the kind of problem which is studied and the methodology available to study the problem. But, the thesis of this paper is simply that the type of research which is done is also a

function of the personality of the researcher and the social structure in which this researcher works. The tricky part of this idea is the fact that these functional interrelations between the social organization of research and the type of research output are what we sociologists call "latent functions," i.e., they are unintended consequences, frequently consequences not even known to exist.

Take the question of job regularity. This is listed as number 6 in the upper left hand box of figure 1. The research of Marcson (1960) and others has shown that one of the problems in industrial research organizations is the pervasive influence of the managerial ideology of regularity. Management has learned through long experience that regularity makes for efficiency. Fixed and regular work hours are important in industry because of the close coordination necessary to keep a plant going, and because of the importance of pecuniary motivation for most employees. If management did not insist on strict hours, there is no doubt that employees would not work the full time expected of them.

However, when other work motives - for example, power in the case of top executives, or the intrinsic interest of the experiment in the case of the scientist - enter the picture, the principle of regularity leads to lowered work hours and reduced involvement in the job.

Marcson's study of a major industrial research laboratory illustrates this process. He describes the situation of a scientist, fresh from the university, who stays after five. He finds his work stymied by the fact that the library, and supply room, and almost all other personnel have left. It does not take long before the eager young researcher interprets this as indicating that "the firm is less interested in the study than I am. Why should I break my neck if they aren't keen about it?" Moreover, he soon learns that they are keen to have him show up at 9:00 a.m. It is not long, then, before he adopts a strict 9 to 5 routine. Thus, the principle of regularity applied to the researcher tends to set an upper rather than a lower limit on work time and work involvement - precisely the opposite of the intended consequence.

Marcson describes this upper limit effect, which I have just mentioned, as characteristic of the major laboratory he studied. My own research, comparing scientists and mathematicians at Cornell with men holding the same degrees and of the same age at a nearby industrial research lab, provides confirming quantitative evidence. The industrial lab scientists worked an average of 47 hours a week, which was almost a day a week "overtime" by their standards. But the university researchers are the real rate busters. They worked an average of 63 hours a week.

Each of the items listed in the upper left box of figure 1 was chosen because there is empirical evidence indicating some aspects of its effect on research output. Undoubtedly, there are other research organizational factors which also influence output, and perhaps some which are more crucial. These are simply those for which there is now some empirical evidence. Moreover, table 1 (which corresponds to the upper left box of figure 1) is further restricted to a somewhat arbitrary dependent variable.

Most of the studies which were located find that there is a marked contrast between the patterns of research organization which seem to work best where immediate utility is the critical requirement, and organizational patterns which seem to work best where creativity, irrespective of immediate utility, is desired. Consequently, for each of the structural factors listed, I have tried to indicate in table 1 which

variation maximizes immediate utility, and which maximizes creativity, a dichotomy which is similar to the familiar basic-applied dichotomy.

Table 1. Research Organizational Structures Which Maximize Immediate Utility of Output vs Patterns Which Maximize Creativity

Immediate Utility	Creativity
1. Within-agency locus.	1. University or grant research (Marcson, 1960).
2. Vertical or hierarchical structure.	2. Horizontal or pie structure (Meltzer & Slater, 1961; Davis, 1954, Polanyi, 1956).
3. Normal administrative supervision.	3. Laissez-faire supervision (Meltzer, 1956; Meltzer & Slater, 1961; Baumgartel, 1956; Davis 1956).
4. Well established work teams.	4. Individual research or ad hoc research teams (Shepard, 1955).
5. Emphasis on project completion within specific time.	5. Tolerance for delays and willingness to change the direction of the research (Kaplan, 1960).
6. Security, regularity, limited working hours.	6. Competitiveness, self-determined work hours and work load (Van Zelst & Kerr, 1951).
7. Full time research on a single project.	7. Variety of duties, especially those involving teaching and contact with scientists working on diverse problems (Meltzer [unpublished]).
8. Emphasis on teamwork and cooperativeness.	8. Toleration of the socially and scientifically "oddball." (Kaplan, 1960; Ben-David 1960).

It will be necessary to skip item 1 (within-agency locus vs university locus of research) for the moment, since the case for this classification is really the summation of items 2 through 8.

Starting, then, with item 2 of table 1 (which is the same as item 2 of the upper left box of figure 1), we have a factor of wide applicability - administrative channel. Meltzer and Slater (1961) find that the productivity of the physiologists they studied goes down as the number of supervisory levels in the research organization goes up. Moreover, this occurs in both large and small organizations. Similar conclusions can be inferred from Davis' study (1956) of NIH scientists. No empirical studies are available for applied research organizations. However, both Storer (1961) and Polanyi (1956) argue on logical grounds, and by extrapolation from other findings, that such an effect does not occur in applied research. Why not?

The answer which Polanyi suggests is that theoretical research has certain self-regulating mechanisms comparable to the price mechanisms in a competitive market. Applied research lacks these and, therefore, needs a unified organizational structure to give it direction. More specifically, basic research is somewhat like the economy in that it has a public medium of exchange. Just as the entrepreneur contributes goods and is rewarded by money, so the basic researcher contributes knowledge to the

scientific system and is rewarded by esteem. To reap this reward, his new knowledge must fit into the system of the science, as indicated by publication in a scholarly journal.

However, these self-regulating mechanisms do not work for applied research. First, much applied research is not published. It is for internal use by a captive audience, which generally lacks the specialized knowledge to evaluate it. Second, applied research has no built-in system to guide the selection of research problems comparable to the role of theory in basic science. Hence, it is just as legitimate for the organizational hierarchy to select the applied scientist's research problem as it is for the scientist himself to select it, and probably more legitimate. But, in basic research, only the scientist knows the theory well enough. Hence, the basic researcher quite rightly rejects the right of an administrative hierarchy to determine the course of his research.

Most of the other organizational contrasts on table 1 are fairly self-explanatory, and I will simply comment briefly on them in serial order.

For item 3, mode of supervision, the evidence is fairly clear. Take, for example, Davis' study of medical researchers. He classified his respondents as working under situations in which (1) the department head had greater influence than the researcher in determining the research on which a man would work, (2) those cases in which the head and the researcher had an equal voice, and (3) those in which the department head had less voice than the researcher in the choice of problems on which to work. Davis' findings are striking. The scores on a research performance index (standardized for age and rank of researcher) go up steadily from 4.5 to 5.2 to 6.0 as the amount of self-direction of the researcher increases.

Item 4, work group organization, is supported by a study of MIT researchers done by Shepard (1955). This study found that the longer a research group worked together, the lower its performance rating. This is the opposite of what might normally be expected, since work group efficiency should increase as the members learn to coordinate activities more precisely. Why this result? The best guess seems to be that it is a function of the stimulation which the divergent approaches of a newly formed group provide. This diversity leads, in the first instance, to a simple increment of knowledge, i.e., each member of the team tends to become better trained by learning from the others. Second, the superior performance of the newly formed groups may stem from the solutions which emerge from attempts to reconcile and integrate the divergent ideas and techniques of the new team members.

For item 5, time pressure, there is a close-to-home example which gives a hint of the subtle pressures which make action agencies unsuitable environments for major research. This example is in the suggested time schedule for a cooperative State-Federal interview type study given on page 43 of the manual Evaluation in Extension (1956). This suggested time schedule allows from 6 to 9 months for the total study!

Actually, such a schedule is possible, and even highly desirable, when the study is a fairly standard descriptive survey. But for any analytical research it is impossible. Just the initial planning of an analytical study should take the 6 to 9 months allowed for the entire study. Similarly, the analysis and write-up will also require 6 to 9 months. In short, almost all research except a descriptive survey should have a two-year time schedule. Many will need three years and some even longer.

Item 6, job regularity and security, has already been discussed.

Item 7, variety of duties and contacts, is related. Meltzer, in an unpublished study, found that full-time research is detrimental to both research quantity and quality. Research output goes up steadily until you reach about 60 percent of time spent on research, and then declines. Moreover, although total productivity increases up to the 60-percent point, figure 2 shows that productivity per unit of time declines from the start.

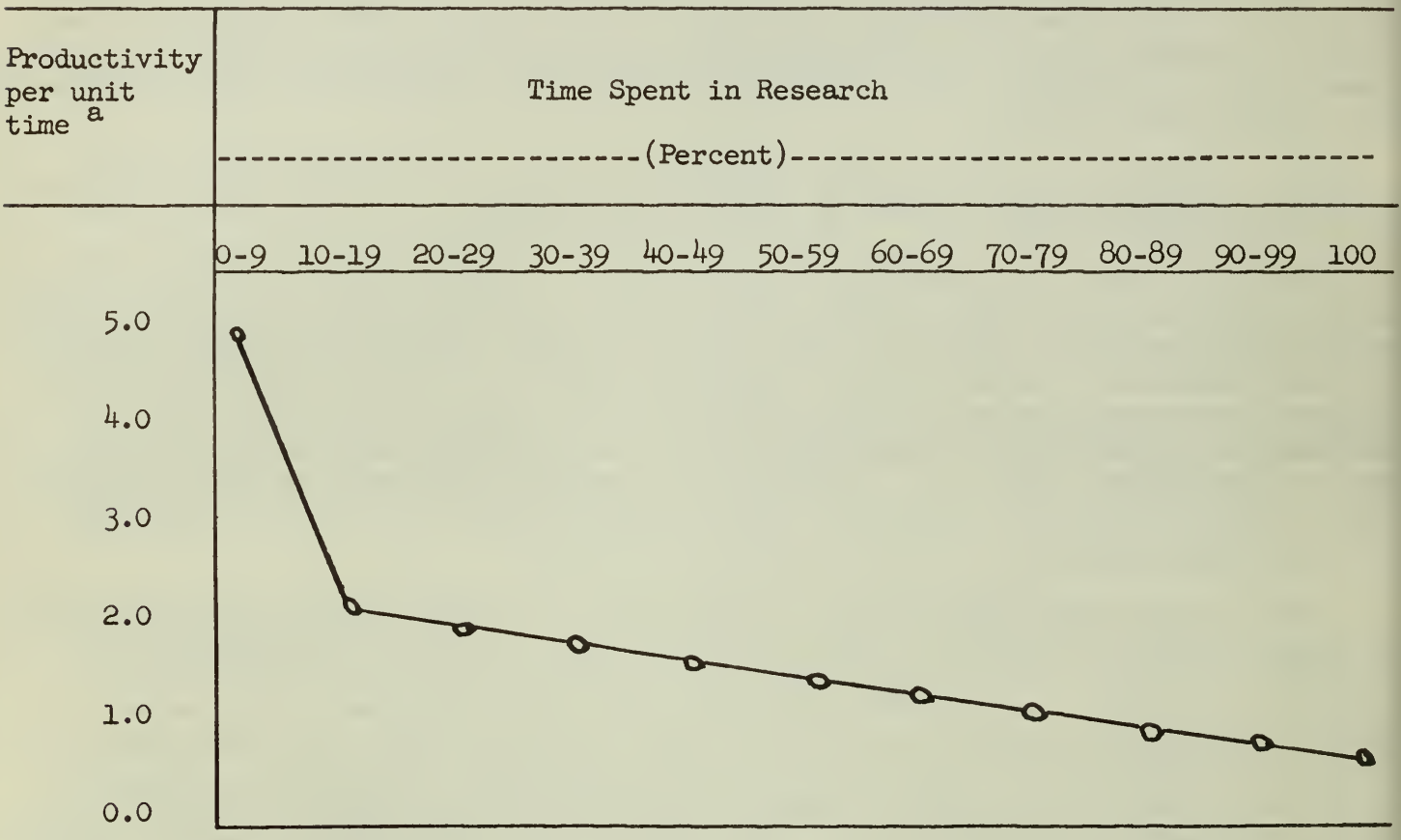

Figure 2. Productivity per Unit Time As a Function of the Total Time Spent in Research (Unpublished study by L. Meltzer)

[a] Productivity per unit time is obtained by dividing the productivity score (here measured by percent of sample writing 5 or more papers in a three-year period) by the midpoint of the appropriate time-in-research interval. Example: 25 percent of those spending 10-19 percent of their time in research wrote three or more papers; productivity per unit time equals 25/15 = 1.67.

In short, two half-time researchers do more than one full-time researcher. Again, I think the explanation lies in the new ideas, new outlooks, new ways of doing things providing a richer source of material to draw on in the creative process, and the necessity of reconciling these divergent viewpoints.

I will skip item 8, because the evidence is both not very good and difficult to summarize briefly, and return instead to item 1, degree of dependence on an operating agency or business. It should be clear from the other items in table 1 that, while the within-agency laboratory, organized along lines of administrative rationality, is conducive to a relatively rapid and assured output with a greater likelihood of having application relevance, this is gained at the cost of innovativeness or creativity. On the other hand, the loosly organized, individualistic, and competitive emphasis of the typical academic department seems to be particularly well suited to maximizing creativity and productivity, but a productivity which will not necessarily have any direct application value. But what about the type of person who can fit into these two contrasting types of settings? Here, too, there are some suggestive empirical studies.

SOME PSYCHOLOGICAL DETERMINANTS OF RESEARCH OUTPUT

As in the case of social structural determinents, the personality variables to be discussed in this section are also limited to those for which there is some empirical evidence of relationship to research output, and the presentation will focus on only one aspect of the problem. I will not discuss such fascinating problems as the "age decrement" in research productivity (Lehman, 1953), or what might be called the "imprinting" of the institution in which the researcher received his graduate training (Axelson, 1960; Knapp and Goodrich, 1952). As in the case of the social organizational factors, I have focused on personality characteristics which affect propensity towards applied vs propensity towards theoretical or basic research.

Findings from several studies will be reported, but most of the conclusions are from a single research. This is a recent study by Storer of agricultural scientists in a major off-campus, but university-connected, research organization.

Table 2 begins with the best documented differentiating characteristic. This is the distinction between what Merton has called the "local" and the "cosmopolitan."

The social psychological factors related to research innovativeness are roughly comparable to those found in studies of farm practice innovativeness. In particular, the real innovators tend to be high in socioeconomic status, and either not well integrated into a tight local social system, or well integrated into a loose system in which innovation is itself a norm (Menzel, 1960).

More specifically, several studies have shown that high research performance is associated with the researcher having primary loyalty to his discipline rather than to the institution in which he is employed. This is so even when the institution is a research organization, and very markedly so when the institution is an operating agency or business.

There are many reasons for this. Take the simple fact that the institutional loyalty of the localite makes him more willing to spend time on matters which are important to the institution (i.e., committees, special surveys needed by the director), but of no intrinsic scientific value. At a more subtle level, we have the fact that the localite's more complete acceptance of the organization's ethos or point of view makes it difficult for him to espouse novel approaches.

Table 2. Variations in Personality of the Researcher Associated With Applied and Basic Research Skills

	Applied		Basic
1.	"Localite" i.e., high attachment to the employing institution. Feels more in common with men at his institution than people doing similar work elsewhere.	1.	"Cosmopolite" i.e., high attachment to the discipline and minimal loyalty to the institution. (Davis, 1956; Storer, 1961; Meltzer, 1956).
2.	Mixed background.	2.	High socioeconomic background, few farmers' sons (Roe, 1956; Storer, 1961).
3.	Enjoyment of on-the-job social relation as end in itself.	3.	Low affiliative motivation; lack of concern for social relations as ends in themselves (Roe, 1956; Storer, 1961; Davis, 1960).
4.	High concern, for the welfare of the organization's target population ("rural values" in the case of Extension) irrespective of farm rearing.	4.	Not particularly welfare (or "preserve rural values") oriented, whether farm or nonfarm in background (Storer, 1961).
5.	Maximum interest in the research at point when the findings are put to use.	5.	Maximum enthusiasm and interest in the research at point that findings begin to "make sense to me" (Storer, 1961).
6.	Prefers fixed hours and to not talk science off the job.	6.	Likes to talk science at all times (Storer, 1961).
7.	Prefers jobs with socially compatible colleagues, and technically competent supervisors.	7.	Emphasized technical competence of colleagues. (Storer, 1961).
8.	Emphasizes salary and other economic rewards; publication opportunities of less importance.	8.	Emphasizes publication opportunities, salary of less importance (Storer, 1961).
9.	Likes collaborative research.	9.	Tends to prefer working alone (Storer, 1961; Marcson, 1960).
10.	Doesn't believe in "narrow specialization."	10.	Thinks specialization necessary (Storer, 1961).
11.	Enjoys working on problems assigned to him if they have clear utility.	11.	Enjoys working only on problems of self-determined intellectual interest (Storer, 1961; Marcson, 1960).

Many other factors also enter the picture, such as the amount of communication and contact with those outside the institution, willingness to change jobs if the research opportunities should turn out to be unfavorable, acceptance of the organization's time schedule even if it means lower quality work, and degree of willingness to take research risks which might result in locally known failures.

The reasons for item 2 in table 2, socioeconomic background, are very complex and, in any case, not established by the empirical evidence, so I will not try to explain it further.

Item 3, affiliative needs, is one of the factors underlying the local vs cosmopolite distinction. In particular, the low affiliative needs of the basic researcher permit him to be detached from the employing institution. James Davis (1960) comments that these men are like camels. Apparently they can get their affiliative needs supplied for an entire year by a single visit to an annual scientific meeting, with perhaps a reprint exchange or two as refreshers.

Time does not permit comment on the other items in table 2, especially since they are reasonably self-explanatory and can be read directly from the table, and since the quantitative evidence in support of these distinctions is confined to a single research.

To summarize these contrasting characteristics of the personality of the applied and the basic researcher, it seems that the theoretically oriented researcher tends to get more of his rewards out of the research itself. The applied researcher tends to get more of his satisfaction out of things related to - but really extrinsic to - the research, i.e., such things as satisfying social relationships and salary knowledge that someone will be able to use his findings for some direct improvement.

This doesn't mean that there is a clear dichotomy between the two types of persons or the two types of work organization. First, the differences have been overemphasized for purely rhetorical purposes. Second, "on-the-job socialization" into the values of the organization and modification of organizational practices go on continually. These provide the integrating processes which allow crossing of lines between contrasting types of research organizations, and research persons.

In particular, the structural pressures and constraints operating to convert the person with a basic research orientation to an applied orientation are very strong. The basic researcher working within an operating agency, such as Extension, gradually comes to adopt and accept as his own the objectives and value system of the agency. He finds himself more and more motivated to do work which will have direct utility for the organization, and he becomes impatient with himself for doing research for which he can foresee no direct application. It seems likely that this process of transforming the motivation of the basic researcher to interest in more and more direct application type research is inevitable when he works within an operating agency context. These unintended structural pressures form a powerful reason for locating the setting for conducting the more complex analytical studies outside of operating agencies.

This should not be taken to contradict what Boyle has said about the very broad approach which Wisconsin takes towards extension research. But, paradoxically, the very liberality of the Wisconsin Extension Service's approach to research provides an excellent example of the unintended but powerful forces which limit the free conduct of research within an agency framework. Although it may not seem so to the extension specialist impatient to have a certain set of research results, the experiment station system is so closely associated with Extension, that it is almost more accurate to classify the experiment station as a "within-agency" type of organization than an "outside" agency.

As one speaker commented yesterday, "the justification for the existence of the Experiment Station is the information it supplies to Extension." This phrase puts its finger on the fact that the Experiment Station is so closely identified with Extension that, at least in the social sciences, it sometimes makes more demands for immediate practicality than does Extension itself. Moreover, since the Experiment

Station is organized along rational administrative lines, it is in a powerful position to enforce these expectations. Thus, while being paid on extension funds at Wisconsin, I obtained Director Ahlgren's informal approval for a certain study. But this same study subsequently was turned down by the experiment station director, on the grounds that it was using extension funds but was not designed to make a direct contribution to Extension.

In this connection, it is interesting to note that most of the speakers at this conference seem to regard the Experiment Station as responsible for carrying out basic research. Actually, it is rather difficult to carry out basic research (particularly in the social sciences) when working in an Experiment Station for reasons which by now should be clear. I mention this fact because it is an indication of how far we really are from basic research in thinking about extension studies.

WITHIN-EXTENSION VS EXTERNALLY CONDUCTED RESEARCH

Having reviewed some of the social organizational and psychological determinants of research output, with particular reference to the question of direct utility vs contribution to basic science, we have some evidence to use in helping to consider the policy question of the most appropriate organizational structure for extension research.

Table 3. Variations in Research Output Associated With Internally and University-Conducted Research

Within-Agency Research	University Research
1. Specificity and applicability maximized at expense of generalizability - applied research.	1. Generalizability emphasized at expense of specificity - basic research.
2. Projects designed to minimize risk and ensure some finding.	2. Projects designed to maximize originality and creativity.
3. Adequate but not exceptional technical competence.	3. Highest level of technical competence, due to informal pressures and supports of colleagues and graduate students.
4. Lower volume of publication and more of it in the form of internal mimeo documents.	4. High rate of publication, mostly in disciplinary journals.
5. Research tends to be completed on time.	5. Frequent delays in project completion, and higher rate of dropped subjects.
6. Willing to suppress research findings to protect sponsoring agency or respondents.	6. Greater willingness to risk injury to sponsoring agency or respondents for sake of contributing to growth of science.
7. Takes responsibility for feedback of research results into the organization by special publications or personal communication.	7. Considers responsibility ended when journal article appears.

Table 3 is designed to summarize and clarify the issue by stating - again, in perhaps exaggerated form - the characteristic type of research output which seems likely to be associated with research done in an organization directly dependent on a business or operating agency such as Extension, as compared to the type of research output which tends to come from the strictly academic setting.

The entries for table 3 were obtained by considering each of the seven ways in which research output can vary - those listed in the right hand box of figure 1 - and in each case asking the question, "What difference does it make in this factor if the research is carried out within an operating agency or within the academic setting?" There is little need to comment on this table, except to note that the first entry - applied vs basic - has been rephrased to bring the issue down to the operating level.

Other Aspects of Within-Agency vs University-Conducted Research

Having made up table 3, a number of miscellaneous consequences of the research locus remained. These did not fit within the rubric of "type of research output" used for table 3. Some, for example, are more type of input, or are operating conditions. Although there is no formal empirical evidence in support of most of these propositions, many of these items probably are of considerable importance and deserve your consideration. They are, therefore, put together in table 4 as a kind of final catch-all.

Table 4. Other Possible Advantages and Disadvantages of the Within-Agency vs University Faculty Research

	Within-Agency	University
1.	Researcher may be viewed as a member of the team, as on "our side" legitimizes study and facilitates "entry."	1. Researcher may be viewed as an impartial outsider who is less likely to leak individual data back into the system.
2.		2. Useful when respondent knowledge of the sponsorship of the study might affect response to question.
3.	Familiarity with the agency leads to sensitivity to problems of real interest to the agency. Researcher is in better position to initiate studies. Greater ease in initiation than if separate contracts had to be made for each study.	3. Familiarity with latest theoretical and methodological developments in the discipline leads to application of these in extension research.
4.	Serves a "yardstick" function. Keeps the agency from being taken in by excessive costs or unvalidated "findings."	4. Serves a "yardstick" function for internal research. Less likely to get in a rut in respect to kinds of problems studied and methodology.
5.	Provides for continuity in research; gaps in one study become leads for another.	5. Provides for continuity in findings since results are more often published.

Table 4. Other Possible Advantages and Disadvantages of the Within-Agency vs University Faculty Research (continued)

	Within-Agency	University
6.	Continuing and closer interaction within the agency allows for closer adaptation to agency needs. For example, suggestions for a specific cross tabulation to pin down a lead thought of by the agency can more readily be communicated.	6. Freedom from minor distractions to concentrate on the main objectives of the study.
7.	Existence of continuing organization with continuing overhead may promote capacity utilization.	7.
8.	Same factor may promote loading the research group with related but non-research routine tasks, such as statistical record keeping, annual reports.	8.
9.	Identification with the agency, and its many problems lead to researcher spreading himself too thin, with resulting superficial analysis.	9. Identification with the discipline leads to researcher not fully exploiting the applied aspects of the problem.
10.	Semi-administrative functions and training activities, which grow out of the research, cut into research time.	10. Professional societies, graduate students, and University committees cut into research time.
11.	Administration's and colleagues' negative valuation of the basic research needed to maintain status in the researcher's discipline impose role conflict.	11. Colleagues' negative valuation of applied research imposes role conflict.
12.	Lower likelihood of questioning existing procedures, due to identification with the agency.	12. Existing procedures and benefits of the agency's program more open to question. Therefore, greater propensity to carry out an experiment which would deny these benefits to a control group.
13.		13. Graduate students and other faculty can be introduced to and become interested in agency as a research site.
14.	Difficulty of recruiting really top quality researchers.	14. Difficulty of interesting disciplinary oriented faculty in a problem with applied aspects.
15.	Volume of research may not justify an internal staff.	15.

IMPLICATIONS AND SUGGESTIONS ON EXTENSION RESEARCH ORGANIZATION

A number of issues have emerged from the papers read this morning and from the discussion which I have just presented. Among the more important of these can be listed:

1. To what extent should extension research be done by a within-extension organization?
2. What should be the professional training, the organizational position, and the pattern of responsibilities of within-extension research personnel?
3. How can competent staff members be recruited and held in extension research positions?
4. How can feedback and utilization of research findings be maximized?

All of these questions are interrelated in the sense that variations in one affect the other. For this reason, I shall start with what seems to be the most general and pervasive question: To what extent should extension research be done within Extension or outside of Extension by experiment station and other academic staff?

Up to this point the discussion has been structured into a somewhat artificial dichotomy in order to emphasize the issues involved. But the world is not an either-or place, and it is now time to get down to earth.

A Three-Channel System

My own version of an earthly paradise for extension research includes what can be called a "Three-Channel Organization of Extension Research." Specifically, given the advantages and limitations of the within-extension and the advantages and limitations of the outside pattern of research, as a minimum both of these are needed, each to work on the type of research to which it is best suited. In addition, as a third channel, a system of research grants is also needed.

A joint experiment station-extension appointment is an important step, and one which I will deal with in a few minutes. But it can solve only part of the problem, since the joint appointee tends to gravitate in his intellectual allegiance to one pole or the other.

Actually, two of the three channels for accomplishing extension research are in current use. Only the third is in any way novel. But the current state of affairs is that some States use the first of these channels, some use the second channel, and some use both channels. None that I know of use the third, except for what might be called the under-the-counter operations of one or two extension directors. The point about formalizing the procedure under the heading of a "three-channel organization" is simply that I am convinced that all three channels need to be employed systematically and simultaneously by all States and by the Federal Extension Service as well. Perhaps a systematization such as I will now discuss can help to bring it about.

The first channel for carrying out extension research is an internal organization, such as are represented by Ohio, or by New York State's Office of Extension Studies. In the long run, it seems to me that such an internal research setup will be and must be the mainstay of extension research. There is no other way to assure research of immediate and direct relevance to Extension at minimal cost. Such a staff would, if

small, devote itself primarily to the kind of studies which George Beal has called "surveys and informal studies." If the resources and personnel were available, it could also work in the area which Beal calls "studies."

However, among the many limitations of this channel is its inherent unsuitability to research of a complex and abstract type. It is too close to the day-to-day operating pressures of the extension program to be able to back off and do the kind of tedious hair-splitting which, unfortunately, is essential for many kinds of research. The more abstract and complex the research, the more important it is to have it done by personnel who are not ideologically and organizationally integrated with Extension.

The second channel is what I have called, for want of a better name, "contract research." By contrct research I mean an arrangement between Extension and a departmental researcher in which no appointment is involved. Extension agrees to supply funds and the researcher agrees to carry out the research. There are no other commitments.

This channel seems to be the most suitable for applied research problems of a more abstract and analytical nature, but which still have specific application objectives. They fall within what Beal, in his paper, called "studies" and "research." Most such contractual arrangements will be made with experiment station personnel since the Experiment Station is committed largely to applied research. However, it need not necessarily be confined to this group, and indeed for certain problems, as in cases when needed disciplinary skills are located in other colleges, persons in those colleges should be encouraged to take on such research.

The third channel for carrying out Extension's research should be a system of research grants. These should be for research which, by virtue of its general subject matter (such as administrative behavior, mass communication), is of interest to Extension, but for which no direct application is foreseen or included in the statement of research objectives. Such basic research is important for the long-term welfare of Extension. Moreover, it often turns up, even if unexpectedly, certain findings of immediate utility.

Research of this type cannot be carried out within Extension due to the special organizational and personality emphases characteristic of any operating agency. Nor, for similar reasons, is it likely to be done in Experiment Stations. Most rural sociologists, for example, are so concerned with improving rural welfare that they cannot bring themselves to carry out basic research in sociology.

Basic research in areas of interest in Extension can, therefore, best be carried out by a system of unrestricted grants to competent and interested investigators regardless of where they are located on the campus. Such grants should be made by a "study committee" composed of competent people drawn from the behavioral sciences, such as anthropology, economics, psychology, public administration, and sociology. It should contain no extension personnel at all, except possibly the extension research leader, and should have a minimum of experiment station personnel, since they are committed ideologically to applied research.

Here I am following the pattern of the National Institute of Mental Health (NIMH) whose behavioral science study committees usually contain one or no psychiatrists or physicians. Moreover, following the NIMH precedent, such grants, once made, should be completely at the discretion of the investigator. That is, the investigator

should be free to depart radically from the research design originally submitted if, in the course of the research, this turns out to be desirable.

Probably the most controversial part of this proposed three-channel organization is the suggestion that Extension support basic research in social science fields related to extension work. First, there is a real question whether Extension can and should support any basic research. Then, even if that point is granted, comes the question of how much support. After all, basic research in the social sciences could use up the entire extension budget with no trouble at all. Critics would call it a bottomless pit.

Certainly Extension cannot accept the responsibility for financing behavioral science research in general. Nor can or should the Extension Service spend even a majority of its limited research funds on basic research. But, I am convinced that some support in this area is needed and will pay dividends in the long run. Therefore, as a wild and arbitrary figure, let me suggest that perhaps 10 or 15 percent of the research budget should be earmarked for these basic research grants.

But why should Extension support any basic research? Isn't this the function of the graduate schools and academic departments of the universities, and the great public and private foundations? Theirs is the primary responsibility, but there are some real advantages for Extension if it also provides at least some support for basic research. I can think of three.

First, a modest program of support for basic research on problems at least somewhat related to Extension is a kind of bait or teaser. I can conceive of it as contributing toward educating the interest of behavioral science research people in problems which are relevant for Extension. Once their interest is aroused by one of these grants, they can, and often will, seek additional funds elsewhere. For example, I started on a project at the University of Wisconsin by "bootlegging" extension research funds for what really is a theoretical problem, but one which I feel in the long run can have many benefits for Extension. This is a study of the familial determinants of entrepreneurial ability. I am now continuing this project with NIMH funds at no cost to Extension.

Second, a program of basic research grants will help provide the contacts and channels of communication with researchers in many departments who can be interested in participating in channel two, i.e., the direct application research contracts. This is a valuable by-product of such grants, since ordinarily it is difficult to interest academic department personnel in doing applied research. Incidentally, these comments apply not only to the recipients of the grants, but also to the people who serve on the study committee making the award.

Finally, a system of research grants can help solve the research finding feedback problem. It provides one additional path whereby the material from the so-called pure sciences can be fed into the stream of extension thinking.

Parallels With the NIMH Program In making the suggestion that every State try to carry forward a three-channel organization of extension research, the research program of the NIMH has provided a useful model. Its program is, of course, more complex, but in essence it uses a three-channel system. Moreover, in connection with the advisability of spending extension funds on basic research, I think it would interest you to know that both the U. S. Office of Education and the NIMH spend large sums on basic research.

I do not know the figures of the Office of Education, but those for NIMH are instructive. NIMH spends only a minority of its research funds on projects which have direct relevance for mental health. In fact, in its major grant program it will not even consider requests for funds to study treatment methods or to evaluate programs. Requests of this type have to go to a special committee called the Mental Health Projects Committee and, over the last 10 years, only 18 percent of NIMH research funds have been spent on such mental health projects. Much more has been spent on such apparently unrelated to mental health projects as my Entrepreneurial Ability study.

Organization of Within-Extension Research

Having suggested one way of dealing with the question of the within-extension vs outside of Extension locus of extension research, we can now go on to focus on some of the problems of the within-extension research organization.

Research and Training First, is the question of whether the functions of extension research and training should be the responsibility of a single person or organization. All of the speakers stated or implied that these two functions should be separate. I could not agree more fully, and for several reasons.

First, and most simply, the volume of research which needs to be done demands the full time of the extension research leader. Second, a training responsibility adds to the already great difficulty of getting first rate research people to take extension research jobs. Third, the accelerating rate of change in social science research techniques and the accelerating accumulation of relevant research findings make it difficult to keep up with just the research aspects of the job. To impose a training function, as well, is to almost guarantee that the researcher gradually will fall behind and, therefore, not be able to do an adequate research job.

Functions of the Extension Research Organization or Person Although functional differentiation of the research task from the training task is essential if the research program is to prosper, there is a limit to how far it should go - especially if we follow the three-channel organization which I have outlined. Under such a system, the within-extension research person or group should, of course, carry out research, but it should also have certain other functions.

As I see the ideal organization of the extension research position, it should have four main responsibilities, and should be as free of other responsibilities as possible.

First, the extension researcher should himself be responsible for the execution of research. It would be easy for him to get into the position where all his time is taken up by the other three functions which I shall mention. But it is essential that this does not happen, since only by continuing to engage in research can he hope to keep up with the changes in the field. In short, irrespective of whether the research could be performed by others, the extension research person needs to keep his hand in it in order to maintain his efficiency in carrying out the other functions.

The second of these four functions is to provide assistance and guidance to the non-research extension staff members who wish to carry out small scale descriptive surveys and evaluation studies. Questions can be raised about the informational value of such surveys, but their educational value in making extension personnel

conscious of the uses and limits of social research is clear. Moreover, "doing a survey" has become the stylish thing. The fact is that non-research extension personnel are going to do surveys, come what may, and it is only prudent that they have expert help in this.

The third essential function is to keep up with the research literature in at least one basic social science, to rewrite this material so that it is applicable to Extension, and to use informal verbal communication to see that these findings get into the thinking of the administration and staff. It is too much to ask anyone to do this with all the social science literature. This is a job which must be organized nationally, and which I shall comment on later. In short, our extension research leader should have a kind of "specialist" role with a subject area in a particular social science discipline.

The final function, which I see as belonging to the extension research leader under this three-channel organization, is to act in what might be called a "foundation executive role." That is, he should be responsible for stimulating and encouraging the resident staff to take on contract and grant research, and should handle the paper work connected with such arrangements.

Some Considerations in Recruitment It is going to be rather difficult to recruit and retain top quality people for the type of position just outlined. Basically, this is because of the role conflicts inherent in the position. If the person employed has an extension background, he will have problems of acquiring and maintaining adequate research training. For various reasons which cannot be developed within the compass of this paper (but which are related to the personality of applied vs basic researchers discussed earlier), the problems of acquiring and maintaining such research skills by a person whose primary training is in Extension are almost insoluble. This is the basis for recommending that the position be staffed with people whose primary training and allegiance are in one of the behavioral sciences.

That is not to say that such a person will not also be faced by role conflicts, only that there is a somewhat greater chance of surmounting them. A person with a background in, for example, psychology will be faced with the necessity of either abandoning any hopes he may have had to becoming recognized as a psychologist, or he will have to devote at least some of his time to carrying out research studies which can make some contribution to psychology as a science.

Fortunately, the latter can be accomplished in most cases if (1) extension administration recognizes this time as indirectly essential for the person's continued usefulness in his strictly extension research role, and (2) if each such appointee holds a joint appointment in an appropriate social science department. Such a combination of the informal pressures and supports from departmental colleagues, plus the availability of at least some time to respond to these pressures and supports by carrying out discipline relevant work, should enable the extension researcher to keep up with his field.

In this connection, I should point out that, for an extension researcher to make contributions to his discipline, separate "basic" research projects are not necessary. If the practice is not discouraged (as unfortunately it tends to be), conclusions of basic scientific importance can be drawn from the data of most applied research projects. But then, as noted previously, data gathering is the least time consuming part of research. Therefore, it must become standard policy to grant time,

or to encourage the use of time, for analysis of the data within disciplinary frames of reference.

I have been able to test hypotheses of theoretical interest to sociologists (Straus, 1958 and 1960) using data from strictly program evaluative type projects. In short, what is "basic" and what is "applied" depends largely on the frame of reference in which the data are analyzed. But, to attack theoretical problems with extension research data, requires time and encouragement from Extension, and the structural support to maintain long-term interest in theoretical problems of the discipline, which can best be achieved by a "real" (i.e., not just a "courtesy") joint appointment.

By a "real" appointment I mean one in which the Department applies the same standards to the joint appointee as to its other staff. The most critical feature of this would be applying the same criteria for increments of salary and rank. Consequently, no extension researcher should be promoted to, say, associate professor, whose contributions to his discipline would not ordinarily warrant promotion. Contributions to Extension under this formulation would be necessary, but not sufficient, to warrant promotion.

Finally, if Extension hopes to attract and hold high quality people from the behavioral sciences, it must be willing to make certain other concessions. Among these could be listed a higher salary than the man could expect to make in an academic department, and liberal financial support and encouragement to attend his own disciplinary professional society meetings. The first of these obviously is designed to entice people out of "normal" career channels, and the second is to help make sure that they are not drawn too far away from the disciplinary heritage which makes them useful to Extension.

It is clear, then, that whatever the staffing and organizational pattern, there are inherent role conflicts and strains in extension research, as in other fields of applied research. Primarily, these grow out of the need for the extension researcher simultaneously to participate in the social systems of extension and of a discipline. To withdraw from participation in either of these systems is disastrous; in the one case immediately, and in the other over the long run.

Feedback of Extension Research Results

The cumulation and integration of numerous separate research projects is a problem in any field of science. However, it is made doubly difficult in the case of extension research because, like other applied researchers, the extension researcher characteristically does not publish much. There are at least three reasons for this.

First, a large part of what he does is of purely organizational interest and not relevant to the growth of the science. Therefore, no matter what the technical competence of the research, the disciplinary journals are not interested in publishing his materials. What difference, for example, does it make to me as a sociologist to know the most effective way of reducing 4-H drop-out. As a journal editor I could not accept such an article.

Second, the applied researcher doesn't need to publish in order to satisfy his own career objectives or to conform to the norms of his important reference group. He has a captive market for his output in the organization which supports him. Since this organization is not part of a discipline, it has little interest in encouraging

his publication outside of the organization.

Third, as one of the previous speakers have pointed out, a large proportion of extension research is reported in graduate student theses. These are the most difficult of all to get into the published literature, since the typical extension graduate student does his research largely as a chore, necessary to obtain a degree. Outside of making use of the research in his own work, or at best communicating it informally to others in his own State, deposit of thesis in the library is usually the end of it.

Now one of the great merits of the position of Extension Research Leader is that this person often is in a strategic position to feed extension research back into the system. But, in order to do so effectively, he needs help. It is both impossible and wasteful to try for each extension researcher to be personally responsible for reading and digesting all the extension research done in the country, to say nothing of the work done in all the social science disciplines. Nor are the very valuable abstracts in the Review of Extension Research enough. Like all abstracts, their purpose is not to substitute for the original report, but rather to tell the reader enough about the study so that he can decide if the original study is relevant enough to make it worth reading.

The gap, which needs to be filled, is for competent reviews and systematizations of the research in each area and sub-area of extension studies. The systematizations in the area of adoption studies is an example of the kind of thing which is needed. However, the ad hoc committee approach is cumbersome and time-consuming, and may lead to premature crystalization of the concepts and findings.

Much of the problem of cumulation and systematization could be alleviated if the often discussed Journal of Extension Research were to become a reality. Such a journal should be devoted to advancing basic understanding of all aspects of extension education through empirical investigation, theoretical analysis, and critical review articles. A publication policy following this formula would help solve the problem of having a generally accessible place of publication for original research studies of interest to Extension and, hence, would provide some of the raw material for the needed cumulation and systematization.

In addition, I would recommend that the journal have as a regular feature, a policy of publishing say one summary review article in each issue, or at the least, two per year. The editors could invite specific people or committees known to be reviewing an area, or use unsolicited reviews (such as is the policy in the journal, Psychological Bulletin).

Another suggestion in the area of feedback of research results into Extension concerns the Extension Service Review. As you all know, the content of the Extension Service Review is heavily devoted to describing case studies of particular experiences. Although there are occasional articles reporting the findings of a research study, most of the content is of the "I've done it this way - you can too" variety. My interpretation of these articles is that they are intended primarily to be "enthusiasm arousers." Such a publication policy is something of an anomaly for an organization devoted to the dissemination of scientifically validated information. Thus, the suggestion for the Extension Service Review is that it, too, establish a policy of publishing summaries of empirical studies in specific areas. These will necessarily be at a lower level of abstraction than the reviews to be carried in the

Journal of Extension Research and would be more oriented to translating the research results into specific educational practice recommendations.

SUMMARY

In summary, this paper has attempted to show how the organization of research, and the personality of the researcher, influence the type of research output, often in unintended directions. Emphasis was placed on the conditions under which the research organization or person will tend to produce material of relatively direct application value, as compared to material intended to contribute to the growth of the discipline, irrespective of whether anyone can make use of the findings.

The Extension Service obviously is interested in making sure that the research which it supports will result in findings which can be used to improve its program and methods of operation. At the same time, as I have tried to show, Extension also has an interest in promoting somewhat more basic types of research, as well as (primarily for the indirect effects) a modest program of completely basic or theoretical research.

If the appropriateness of these types of research is granted, and if the findings of the various studies of the social organization of science which have been reviewed are valid, then it follows logically that different patterns of research organization are needed in order to most effectively accomplish these somewhat contrasting types of research. Hence, the necessity for which I have called the "Three-Channel Organization of Extension Research," together with the suggestions made in connection with recruiting, the types of appointment to be made, and the means of increasing the feedback of research findings into Extension.

Finally, I want to repeat that most of these suggestions are not novel. In fact, I believe that, at one time or another during this conference, practically every one of these suggestions has been made either in public statements or during informal conversations. However, there also have been many other proposals put forward, some of them quite contrary to the ones suggested in this paper. Therefore, the contributions which I hope this paper has made are, first, to show that there is some empirical evidence supporting one set of recommendations; and second, to arrange these recommendations into a system with at least some logical order and internal consistency.

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Section VII.

APPENDIX

Appendix A.: EVALUATION OF SEMINAR

The Division of Extension Research and Training conducted a post-seminar evaluation at the request of the seminar committees. In the interest of expediency, a single instrument (mail questionnaire) was developed for use with participants in one or both seminars. Some 71 replies were received. Except for occasions where questions involve both seminars, only those pertaining to the research seminar will be commented upon at this time.

Respondents offered as their main objectives for attending the research seminar some 22 different reasons. After grouping those that tended to say the same thing, the leading reasons were: (1) To learn more about how other States are organized and what the State extension research people are doing: (2) to identify problems needing research attention in Extension; (3) to discuss common problems of operation, research techniques, and research findings with others engaged in extension research; and (4) to learn about completed research and research under way in Extension.

Three-fifths of the participants in the research seminar felt their stated objectives had been achieved almost completely. Almost two-fifths felt they had been achieved in part. Five percent felt they had been not very well achieved.

As might be expected, attendance was greatest during the joint sessions. Attendance of respondents at the different presentations on April 19 ranged from 57 to 66. They were asked to check up to three of the six contributions offered during the day that they considered most worthwhile to them. The most favored contributions, with percent checking them as being among the three favorites, were: (1) "Some Theories and Problems of Organizational Research" (58); (2) "Let's Take Extension Research off the Shelf" (40); and (3) "Needed Research in Extension Administrative Organization" and "Needed Research on Extension as an Organization as Seen by an Extension Administrator" (32 each).

During presentation of the remaining eight sessions of papers, panels, and small group discussions, attendance ranged from 27 to 48 among respondents. The pre-seminar clinic on farm and home development was least well attended by respondents (27) but over half of them (56 percent) checked it as one of the three most worthwhile sessions they attended. However, much of both size and enthusiasm results can be explained by the fact that participants in this session were assembled by invitation from among persons known to be actively involved in or concerned with farm and home development.

Other favorites were the summary paper, "Social Psychological Aspects of Extension Research Organization" (37 attended; 54 percent checked); the formal paper, "The Function of Extension Research," and the two discussion papers related to it. (48 attended; 35 percent checked); and the three-paper session on regional research in Extension (43 attended: 26 percent checked).

A question was included regarding preferences for joint or separate sessions of training and research people at future seminars. Of the 44 who had attended at least one of the sessions of both the training and research seminars, 67 percent favored

combining, 13 percent favored separate seminars, and 20 percent were undecided. Of those who favored joint sessions, three-fifths would like to have them assembled annually and two-fifths would like them to be held bi-annually.

Respondents were asked about preferences for emphasis of future conferences, if they were to be of the combined variety. By assigning three points for a "greatest importance" check, two for "considerable interest," one for "little interest," and none for "no interest" or no comment, preference was assigned, in terms of these weighted scores, equally to extension training and extension research content areas (107 points each), followed by resident teaching (65 points) and other research (51 points). For purposes of evaluating these answers, it might be mentioned that, of the 44 respondents, 12 were concerned primarily with training, 8 with research, and 14 with resident instruction. The others had some form of joint responsibility.

Another question was asked regarding preferences for holding future seminars or conferences, irrespective of whether separate or joint, on a selective or general invitation basis. Preferences were almost equally divided: Selective, 53 percent; general, 47 percent.

Appendix B.: PARTICIPANTS

FULL-TIME PARTICIPANTS IN THE NATIONAL RESEARCH SEMINAR

Frank D. Alexander - New York
Dean Allen - Michigan
Marvin Anderson - Iowa
Thomas Averill - Kansas
E. H. Bates - Maine
George Beal - Iowa
Patrick Boyle - Wisconsin
Emory Brown - Pennsylvania
Darcie Byrn - Washington, D. C.
V. R. Cardozier - Maryland
John Cavender - Arkansas
S. Chandler - Georgia
Robert Clark - Wisconsin
Charles Cleland - Tennessee
Mary Collings - Washington, D. C.
Ben Cook - Texas
Harlan Copeland - Washington, D. C.
Harry A. Cosgriffe - Montana
Keith Decker - Washington, D. C.
Lewis Dickson - Tennessee
Robert Dimit - Ohio
G. A. Donohue - Minnesota
Robert Dotson - Tennessee
Mike Duff - Kentucky
J. A. Duncan - Wisconsin
Bert Ellenbogen - New York
Howard Finch - Colorado
Fred Frutchey - Washington, D. C.
Eva Goble - Indiana
D. M. Hall - Illinois
Maynard C. Heckel - Virginia
John Holik - Missouri
Errol Hunter - Oklahoma
J. H. Jones, Jr. - Louisiana
E. J. Kreizinger - Washington
J. J. Lancaster - Georgia
Grace Larson - Washington, D. C.
J. Paul Leagans - New York
Jim Longest - New York
Wm. Lutes - Nebraska
W. Glen Marders - California
C. Paul Marsh - North Carolina
Joe Matthews - Washington, D. C.
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